WESTERN GAS

The Model "F" or the Model "FC" Robertshaw are provided as standard equipment with all types of modern gas ranges.

DEMONSTRATING is the root of all selling. Over a hundred range makers install the Robertshaw to give you one of the finest demonstrating features ever put on a gas range.

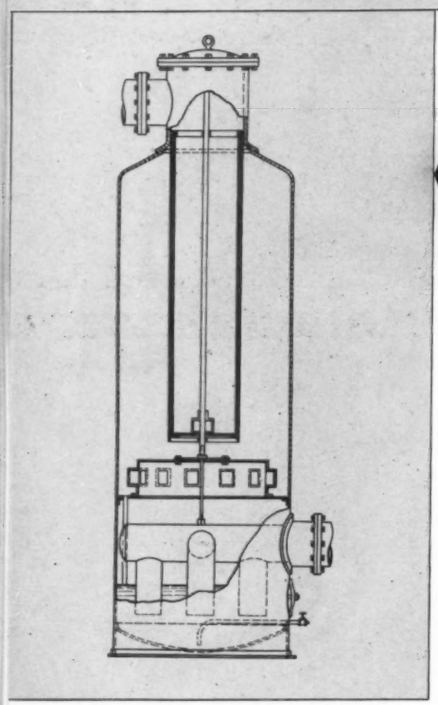
For they know that most women want a modern gas range with a dependable oven control. This means nothing less than the Robertshaw .. the time-proved oven control that serves year after year with unabated trustworthiness.

Not all oven controls can match that record by any means .. but we do not need to raise that point. You know from your own experience that it pays you to have the kind of ranges that are equipped with the Robertshaw.

THE ROBERTSHAW THERMOSTAT COMPANY
Youngwood, Pa.

ROBERTSHAW "Automati-Cook"

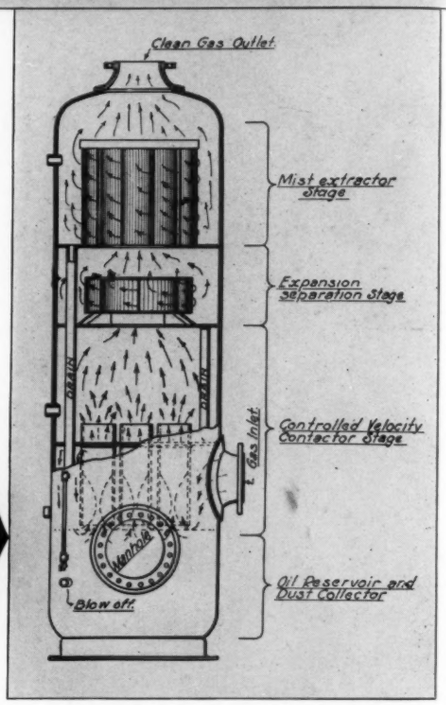
PROGRESS in GAS SCRUBBING



Original Empire Gas Cleaner
Patents Owned by Blaw-Knox Company

The original Empire Gas Scrubber was good at the time because there was nothing better

The development of the present day Blaw-Knox Gas Cleaner from the old Empire fundamentals was the dawn of a new era in Gas Scrubbing



Improved Blaw-Knox Gas Cleaner
(Patented)

ELABORATE and painstaking research and experiment in both field and laboratory, has resulted in the evolution of the Empire Gas Scrubber to the finished and highly perfected mechanism represented by the 1934 Blaw-Knox Gas Cleaner. Blaw-Knox Gas Cleaners offer a profitable investment for the distributor of natural or manufactured gas and the transmission line operator. They insure continuity of service, reduced maintenance and increased customer satisfaction.

Some advantages of the BLAW-KNOX GAS CLEANER

Higher capacity per unit size.

Lower pressure loss at full load.

Pressure loss constant throughout life of equipment. No screen to clean.

Major portion of dust settled and taken entirely out of gas stream.

Practically no oil loss. Large reservoir capacity.

Absolutely non-clogging with large flow areas.

Let us show you specifically what we can do for your conditions.

BLAW-KNOX COMPANY
2016 Farmers Bank Bldg. Pittsburgh, Pa.
Offices in Principal Cities

BLAW-KNOX GAS CLEANERS

TWO *Important Questions* DEFINITELY ANSWERED

1 *Can* DRESSER COUPLINGS *be* SIMPLY, QUICKLY, ECONOMICALLY INSTALLED?

Yes, because of absolute uniformity in size and simplicity of design. Dresser "factory-made" joints can be installed in the field by inexperienced labor—even under conditions where it is difficult, and sometimes impossible, to make other types of joints.

2 *Will* DRESSER COUPLINGS *be* TIGHT UNDER ALL CONDITIONS, INITIALLY, AND 50 YEARS LATER?

Yes, experience has proved this point. The first Dresser line, laid nearly fifty years ago, is still in service . . . all the joints are perfectly tight and have required no attention. All subsequent Dresser installations have similar records of performance.

For nearly half a century, Dresser Couplings have established the Gas Industry's standards for a simple, flexible, durable joint. Today more than 100,000 miles of steel and cast-iron pipe is Dresser Coupled. No other joint has an equivalent record of service.

S. R. DRESSER MFG. COMPANY
BRADFORD, PA.

In Canada: Dresser Mfg. Company, Ltd.
32 Front Street, W. Toronto, Ontario.

DRESSER COUPLINGS *DOMINATE!*

April, 1934, Volume X, Number 4. Western Gas is published by Western Business Papers, Inc., at 810 South Spring Street, Los Angeles, California. Subscription price (in advance) 25 cents the copy; $2.00 per year; 2 years, $3.00; $3.00 per year foreign. Entered as second class matter June 1, 1925, at the postoffice at Los Angeles, under the Act of March 3, 1879.

Doubled impact-strength of means doubled protection

The WRONG *way to unload pipe from a truck*

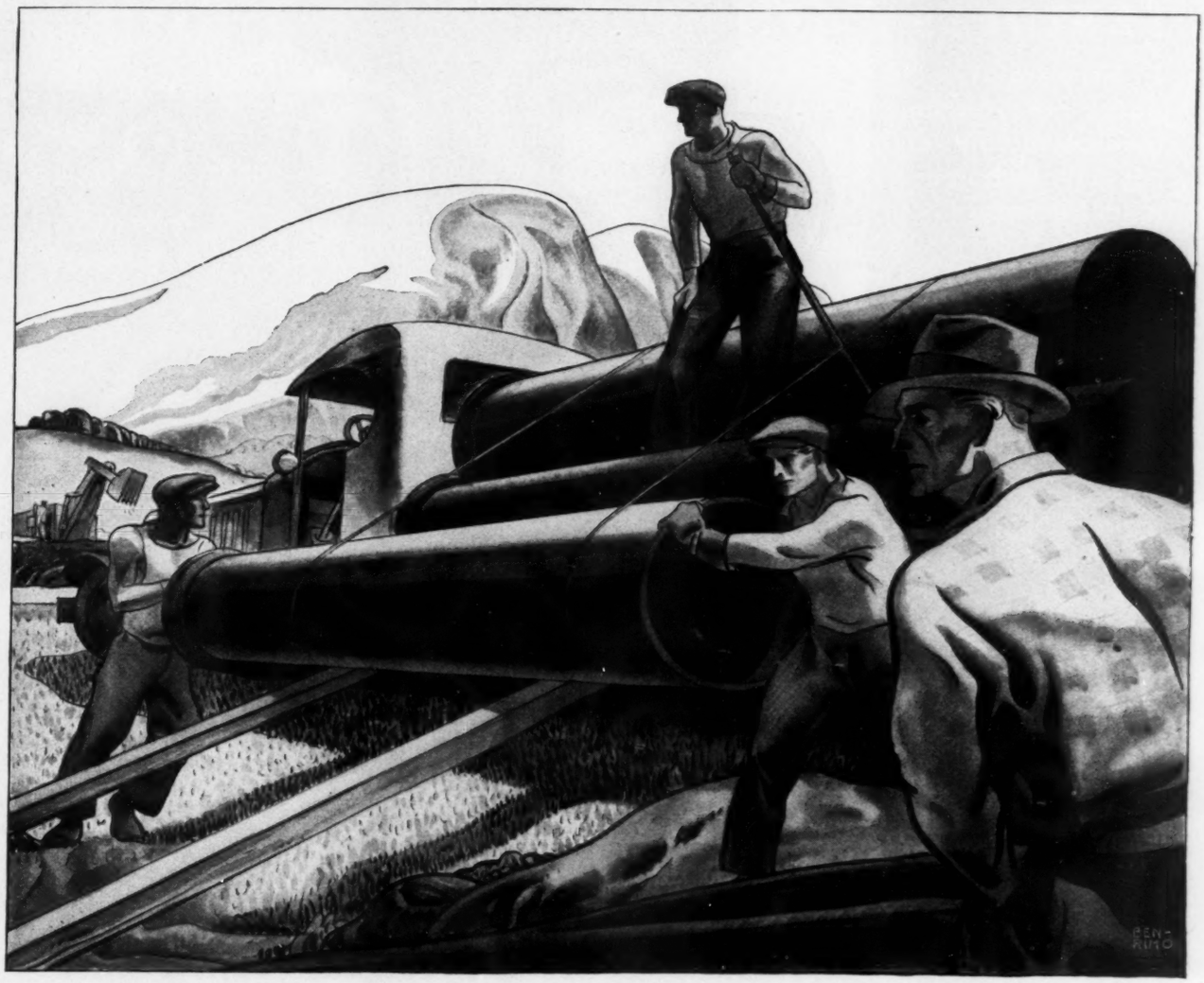
Most engineers suspect what all pipe founders know—that many a pipe failure got its start through damage to the pipe somewhere along the line from the foundry to under the ground. We cannot control the handling hazards in transit, unloading and distribution but *we have reduced* their potentiality of damage to our pipe.

Two years ago our research and technical staffs undertook to develop a super-pipe with impact-resistance increased to a degree which would mean maximum protection from plant to underground. After many experiments the Super-de Lavaud process was discovered and perfected, resulting in a cast iron pipe which is shatter-proofed to the extent that

IMPACT-RESISTANCE IS INCREASED 100%

Super-de Lavaud Cast Iron Pipe is centrifugally cast by a patented improved process. This process is the combined result of a basic discovery amounting to a revolutionary

SUPER-DE LAVAUD PIPE against handling hazards



The RIGHT *way to unload pipe from a truck*

metallurgical change plus improved annealing. It has been standard practise in our Centrifugal Pipe Units for more than a year.

The greatly increased *impact-resistance* and the *non-shattering characteristic* of Super-de Lavaud Pipe are due to a fundamental change in metal structure resulting in a tougher pipe. These advantages have been secured while maintaining high tensile and bursting strength; also the resistance to corrosion for which cast iron pipe is celebrated. Obviously, Super-de Lavaud Pipe exceeds in all respects the requirements of the Federal Specifications Board for this product.

Send for descriptive booklet with full details.

UNITED STATES PIPE AND FOUNDRY COMPANY

GENERAL OFFICES . . . . BURLINGTON, N. J.

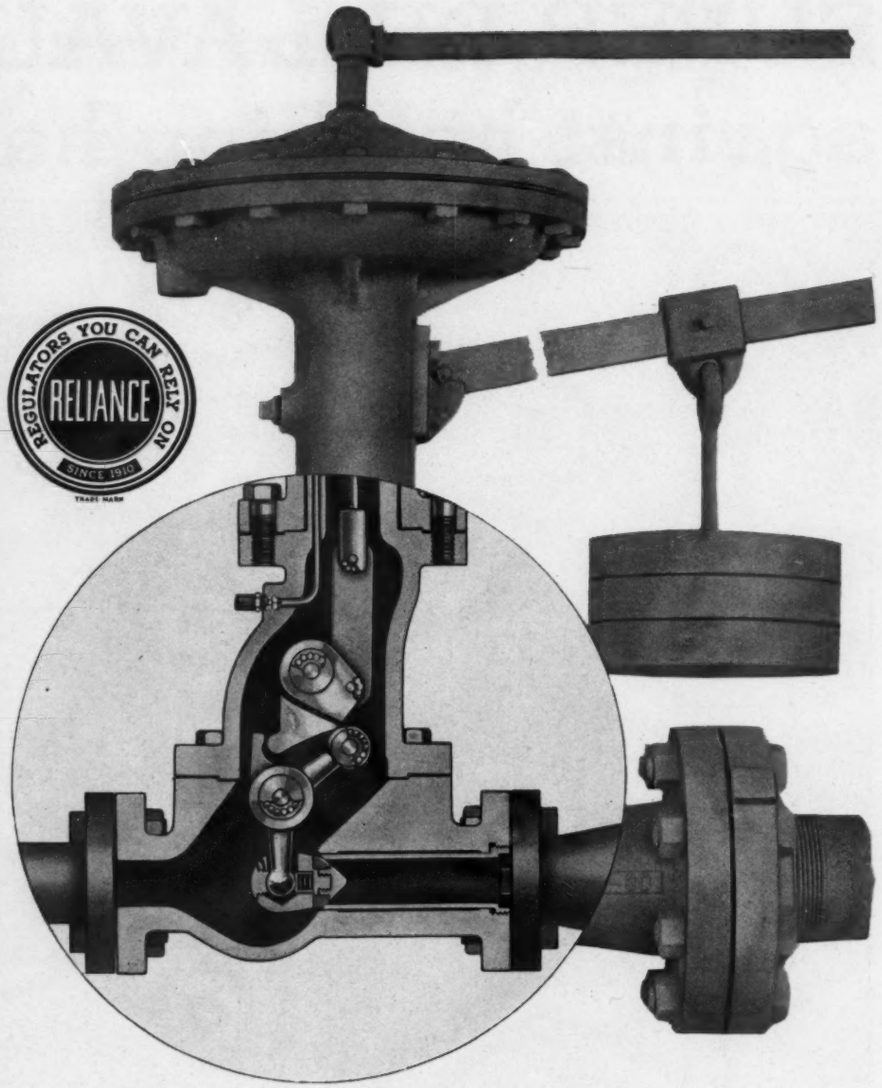
FOUNDRIES AND SALES OFFICES THROUGHOUT THE UNITED STATES

NRA MEMBER U.S. WE DO OUR PART

8 Outstanding FEATURES

1. Stream-lined valve mechanism insures maximum capacity with minimum friction.
2. Self-centering valve operating on a ball socket joint.
3. Removable valve seat takes shock of expansion and turbulence.
4. Roller ball bearings used at all bearing points.
5. Larger capacities obtainable through Type P Regulators.
6. Alemite fittings provide for packing box gland lubrication while Regulator is in operation.
7. Eccentric cam bearing shaft may be adjusted from outside of Regulator.
8. Lever weighted Type P Regulators may be readily changed to pilot controlled types.

Write for Bulletin No. 32



Maximum Capacity and Minimum Friction

The Reliance Type P Regulator is a new and proven design differing from the conventional types. A single stream-lined valve mechanism floating in the stream flow insures maximum capacity with a minimum of friction. The valve is self-centering with orifice throat and operates on a ball socket joint insuring perfect alignment. Roller ball bearings are used at all bearing points for ease of action in working parts. A removable valve seat takes the shock of expansion and turbulence. Because of its design, expanding gases and turbulence do not bother working parts of the Type P Regulator and any scouring action is entirely eliminated. The Type P offers larger capacities than any conventional types and installations can be made using smaller size pipe than generally employed. Where main lines and service piping are already installed of a larger size, then the Regulator Venturi Reducer fittings may be utilized.

The eccentric cam bearing shaft may be adjusted from the outside of the Regulator and lever weighted Regulator may be readily changed to pilot controlled types. Made in 1″ and 2″ sizes only with a maximum inlet pressure of 500 pounds.

RELIANCE REGULATOR CORPORATION

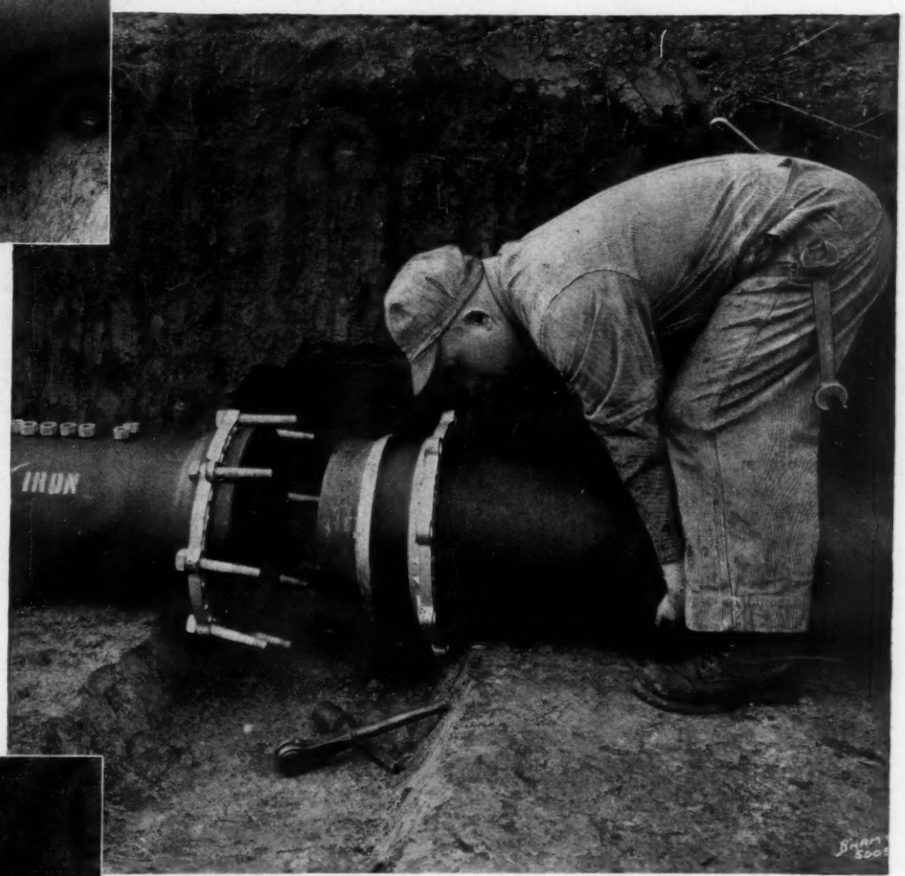
1000 Meridian Avenue Alhambra, California

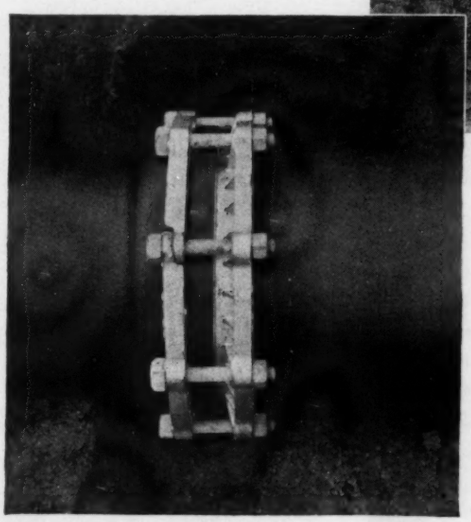
RELIANCE REGULATORS

CAST IRON PIPE
with gas-tight mechanical joints

The several mechanical joints made by members of this Association differ in design but are based on the same principle.

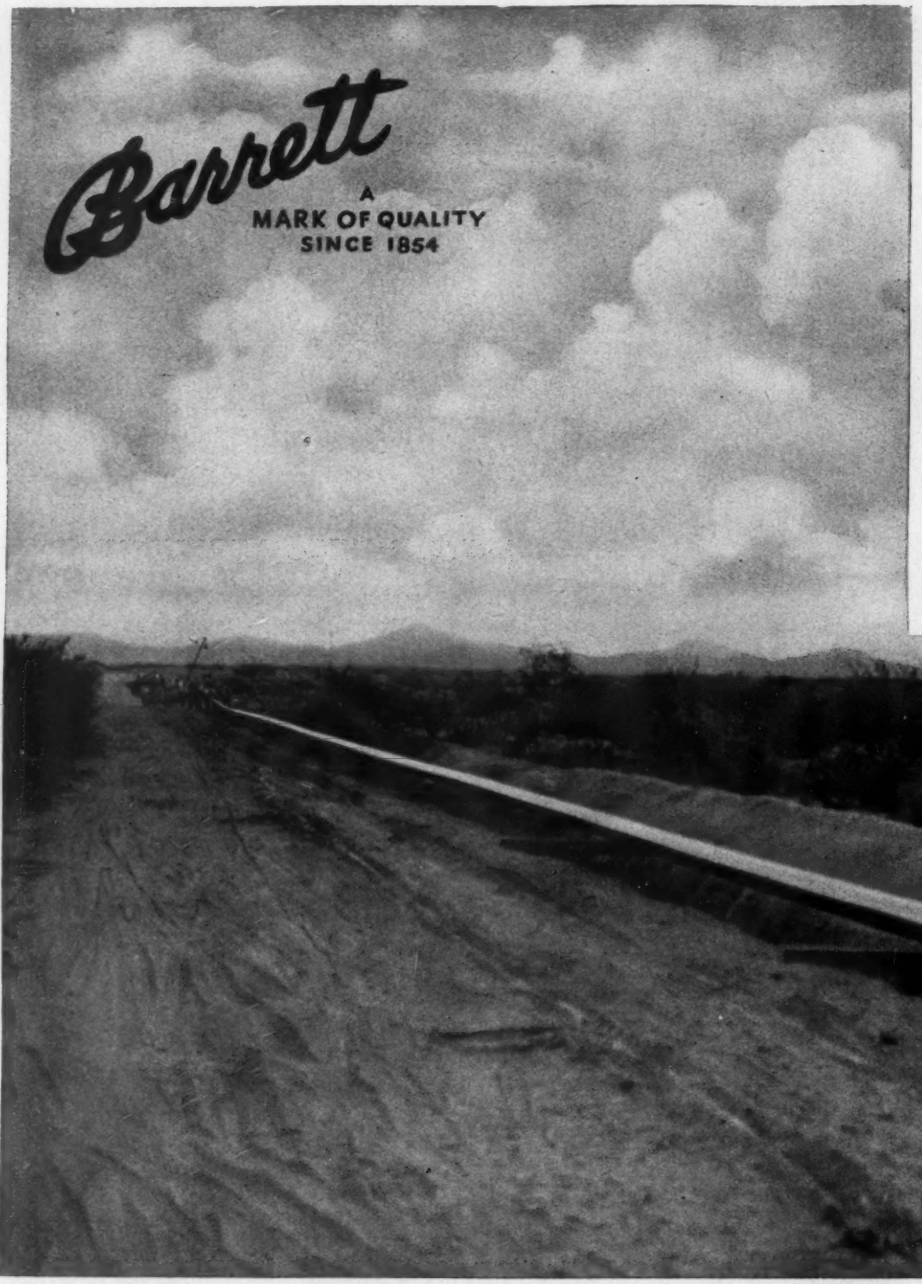
All these joints have rubber gaskets and follower rings. All are rendering gas-tight service under high pressures.





Note the ease and simplicity of installation. No skilled labor. The only tool a ratchet wrench.

THE CAST IRON PIPE RESEARCH ASSOCIATION
Thomas F. Wolfe, Research Engineer
309 Peoples Gas Building, Chicago, Ill.



Reproduction of the micrograph above shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent they give Barrett Pipe Enamels unusual toughness and resistance to soil stresses.

For pipe of large diameter, The Barrett Company will furnish equipment required to revolve pipe and spread enamel.

BUILT on 80 Years of Waterproofing Experience

Barrett Specification

PIPE LINE ENAMELS

Metal pipe will last years longer and have greater immunity to aging and corrosion when it is protected with Barrett Specification Pipe Line Enamels. Moisture-proof and not affected by earth acids. Barrett Specification Pipe Line Enamels are also non-conductors of electricity. They provide a smooth, tough, film which gives extraordinary resistance to mechanical injury and to corrosion and electrolysis. Behind Barrett Specification Pipe Line Enamel stands eighty years of experience in the development and application of coal-tar protective coatings. Barrett offers the cooperation of its Technical Staff and the service of its Field Engineers for developing special protective coatings and efficient methods of application. 'Phone, wire or write for further information.

THE BARRETT COMPANY, **40 Rector Street, New York, N. Y.**

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WESTERN GAS

"Reg. U. S. Pat. Off."

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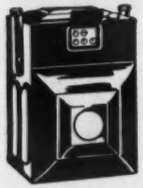
MEASUREMENT AND CONTROL

· GAS · AIR · STEAM · OIL · FLUIDS

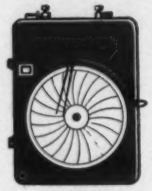


TINNED STEELCASE METERS

• A list of the meter developments pioneered by American Meter Company factories would include practically every advance in meter design and construction. Many still remain exclusive features.

New metals and compositions have been adopted for many parts. Improved methods of analysis for both leather and oil enable us to produce diaphragms which meet all conditions in the industry. The new patented unobstructed tube screw provides a sturdy joint withstanding greatly increased strain in meter setting. Cast-in valve seats and the design of moving parts and stuffing boxes definitely reduce friction, insure fixed precision and prevent leakage.

Complete information in Bulletin TG4.



INTEGRATING ORIFICE AND FLOW METERS

• Direct reading . . . automatically . . . instantly! Automatically computes the metered volume for variation in pressure and rate of flow. The total is always visible on the index. And the chart gives you a permanent hourly record for analysis and future reference.

The operation is continuous . . . all functions being performed mechanically by special gearing without the use of clutches, reversible cams or levers. Thus the indicated total is always accurate.

• The Integrating FLOW METER operates at constant pressure only.

Engineering Bulletin E-16 fully describes applications and operation.

WET TEST METERS

• Every detail from gage glass to water line marker and chromium plated pointer insures not alone more precise readings . . . quickly . . . but assures continued accuracy of operation. Greater facility of adjustment is provided. The metals and materials employed throughout afford maximum protection against corrosion. Write for Engineering Bulletin AG3.

IRONCASE METERS AND BASE PRESSURE INDEXES

• IRONCASE METERS. Accuracy in displacement meters hinges upon eliminating internal leakages. Ironcase meters prevent internal leaks by eliminating machined joints and gaskets between body, table, partition, outlet channel and diaphragm channels. They are cast as one unit. Write for Bulletin EG40.

• BASE PRESSURE INDEXES. Instantly . . . automatically . . . the quantity of gas which has passed through the line is computed. Billing data always up to date. The computing of charts no longer is necessary. (BASE VOLUME INDEXES register the quantity at standard conditions of base temperature as well as base pressure.) Write for Bulletin E12.

INDICATING FLOW METERS

• Accuracy . . . sensitivity . . . simplicity . . ruggedness . . are features of this indicating flow meter which have been established under all sorts of conditions in the measurement of gas, steam, air, oil, water and other fluids.

Every portion of the instrument is accessible for cleaning and adjustment . . . even the mercury columns. A low pressure test can be conducted when the top is removed and the action of the float during the test can be observed. The float lever can be adjusted without disturbing the other working parts.

Complete data on applications and operation are given in Engineering Bulletin E3.

AMERICAN METER COMPANY

INCORPORATED

Measurement and control of Gas, Oil, Steam, Air and Liquids

ESTABLISHED 1836

GENERAL OFFICES : 105 W. 40TH STREET · NEW YORK, N.Y.

April, 1934

WESTERN GAS

"Reg. U. S. Pat. Off."

Vol. X, No. 4

A Monthly Journal of the Gas and Gas Appliance Industries in *Western America*

Executive Open Forum on 1934 New Business Promotion

TO a conference of operating and sales executives of the Columbia Gas & Electric Corp. group, held at Dayton, Ohio, last month, Columbia vice-president Paul S. Clapp contributed an executive open forum on these two primary questions:

(1) What are your general views as to the timeliness of more aggressive sales effort at the present time, and the prospects of success?

(2) What are your thoughts as to the particular directions, both in gas and electrical fields, upon which major sales efforts should, at the present time, be focused; specific sales programs which you have already initiated or have in mind for this year?

These queries Mr. Clapp put to leading sales executives of the nation, outside of the Columbia group, and brought their answers to the Dayton conference.

Replies to the first question show an absolute unanimity of opinion that aggressive sales effort is the only course open to the industry, and that those companies which do not recognize this will pay dearly for the oversight. Several companies pointed out specifically that they are adding men in every promotional department; that they expect to use the renewed business confidence to build up selling morale. One particularly significant comment urged utilities to "ignore the present agitation . . . for municipal plants, for lower rates, etc., and concentrate on clean-cut sales programs based on the merits of the service to be supplied."

From the replies to Question Number 2, on specific sales programs, it is evident that there will be a unified drive in every new business classification in 1934; that sales department budgets and quotas will be above previous years; that efforts will be directed at making dealer outlets more productive; that non-sales employees will be trained for more definite sales assistance; that rental plans on domestic appliances will be further utilized. It is particularly apparent that these executives are concentrating their companies' efforts upon all domestic load, particularly gas water heating and house heating. Ranges and refrigeration will also figure largely in the year's gas sales program.

Introducing this significant forum, Mr. Clapp pointed out that aggressive sales development is the one constructive step which utility companies can take to overcome the effects of the depression. Controllable expenses have been pushed to the very bottom. Such major items as taxes, fuel and labor costs have risen sharply and are not subject to control; additional plant investments to handle service peaks of 1929-30 have raised fixed charges; rates are relatively inflexible, so far as upward adjustment is concerned. All of these factors demand that sales efforts travel a faster pace than ever before.

More Action on Right to Sell

GAS and electric utility merchandising is in the news again. Texas Supreme Court in March upheld the right of the San Antonio Public Service Co. to sell appliances under its charter; and the U. S. Supreme Court has ruled that it will review the Kansas Supreme Court's decision which held invalid the 1931 anti-merchandising statute in that state.

For more than a year the San Antonio case has been in court, the State of Texas having challenged the utility's right to merchandise under its charter. The intent of the action was to divorce utilities in Texas from the appliance business, which issue seems now to be definitely determined in this state.

On April 2 the U. S. Supreme Court was due to review the Kansas decision, on an appeal initiated by the Kansas attorney general. Gas company counsel contended that this Kansas officer was bound by the decision of his highest state court in the construction of state statutes, and that the U. S. Supreme Court had no jurisdiction to review the case on his appeal. On February 19 the U. S. Supreme Court determined to hear the case, and set hearings for March 5, subsequently postponed to April 2 on application of the Gas Service Co. Gas Service subsidaries carried the original case against the Kansas law through the state courts.

An airing of the merchandising issue in the nation's highest tribunal may do more than anything else could do to substantiate the utilities' right to sell, and remove the threat of restrictive legislation. Utilities everywhere are deeply in the debt of the Gas Service companies for their effective defense of the merchandising principle.

Wastage

The Effect of Stripping Panhandle Oil

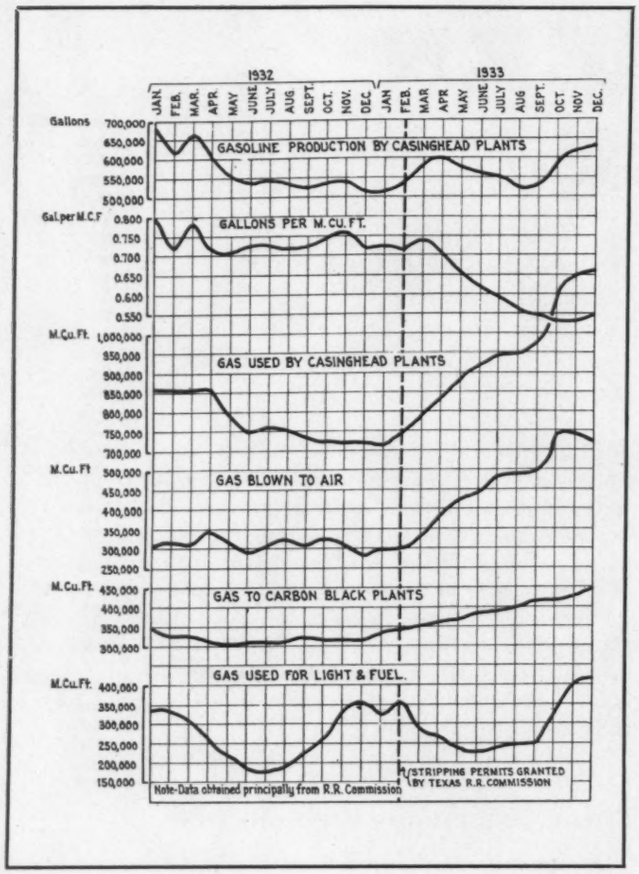


FIG. 1. Daily average production—Panhandle Gas Field.

THE probable life of the Panhandle gas field will be reduced from the original estimate of 25 years to a period of ten years or less, if the practices now in vogue are continued. This reduction in the life of the gas field will be accompanied by a corresponding reduction in the life of the oil field with the loss of millions of barrels of oil which might be recovered with good operating practice. This loss of natural resources will be the result of greed and lack of foresight on the part of a comparatively few operators.

Brief History of the Panhandle Field: The Panhandle field is truly mountainous in structural form and area. It is the largest single producing field in the world, having a length of 115 miles and an average width of 20 miles. Its present defined limits contain approximately 1,350,000 acres of oil and gas lands. The original reserves have been estimated by competent engineers as approximately 16 trillion, 100 billion cubic feet[1] of recoverable gas and 1 billion barrels of oil.

The discovery well was drilled in 1918, but for various reasons active development did not get under way until late in 1925. The field now contains about 727 gas wells and 2,000 oil wells, of which a great majority produce enormous quantities of casinghead and bradenheaded gas. The 727 gas wells had an average initial open flow of 26,750,000 cubic feet per day. The oil wells produced 16,635,000 barrels in 1933, or an average daily production of 45,575 barrels, while under proration rules which limited the production to about 30 per cent of the potential. The production of oil, gas, and natural gasoline is given in Table No. 1.

No accurate data on the casinghead gas production are available for the first six years, but the estimates of Victor Cotner are considered reliable and are accepted by engineers.

Total Production to Date: The total production of oil to December 31, 1933, was 205,891,000 barrels. The total production of gas to pipe lines and casinghead plants was 2,929,303,600,000 cubic feet, but this quantity may be conservatively increased by 1 trillion cubic feet by gas which escaped into the air during drilling and producing operations. The total production of gas to the end of 1933 was approximately 4 trillion cubic feet, leaving the present reserves at approximately 12,100,000,000,000 cu. ft. of gas and 800,000,000 barrels of oil.

TABLE NO. 1. OIL, GAS, AND NATURAL GASOLINE PRODUCED FROM PANHANDLE FIELD, 1926-1933

NATURAL GAS IN M CUBIC FEET

	Transported to Pipe Lines (a)	Processed by Casinghead Plants	Residue Used by Carbon Black Plants	Residue and Other Gas Blown to Air	Natural Gasoline in Gallons (f)	Oil in Barrels (e)
1926	(b) 15,725,533	(c) 34,300,000	(c) 1,890,000	(d) 209,094,000	13,209,047	25,818,000
1927	8,825,598	(c) 263,800,000	(c) 11,280,000	(d) 324,930,000	97,105,711	39,807,000
1928	39,978,176	(c) 330,500,000	(c) 43,020,000	(d) 279,175,000	123,900,115	25,229,000
1929	84,767,509	(c) 395,110,000	(c) 136,374,000	(d) 284,088,000	206,885,321	25,563,000
1930	81,175,878	(c) 412,796,000	(c) 168,104,000	(d) 267,078,000	317,733,167	32,866,000
1931	86,538,708	(c) 346,255,000	(c) 120,387,000	(d) 187,489,000	270,260,000	21,895,000
1932	97,168,645	(a) 283,753,000	(a) 118,591,000	(a) 113,855,877	226,779,672	18,015,000
1933	109,179,977	(a) 339,429,576	(a) 152,133,000	(a) 157,223,924	222,855,318	16,635,000
Total	523,360,024	(a) 2,405,943,576	751,679,000	1,822,883,801	1,478,728,940	205,891,000

(a) Reported to Railroad Commission.
(b) Includes gas transported by pipe line companies for prior years.
(c) Estimated by Victor Cotner Natural Gas in Amarillo District. Bulletin A.A.P.G. Vol. 17, No. 8, August, 1933, PP. 877-906.
(d) Estimated. Includes 35 per cent of gas processed for gasoline and Cotner's estimates of gas escaped from drilling and producing wells.
(e) Reported by various authors in Bulletins of A.I.M.E.
(f) Reported by natural gasoline producing companies.

(1) Victor Cotner, Am. Assn. Pet. Geol. Vol. 17, No. 8, August, 1933.

in the Panhandle

Dry Gas Wells upon Life of Texas and Gas Field

By EVERETT CARPENTER
Consulting Geologist
Amarillo, Texas

Facilities for Marketing Gas: The present facilities for marketing gas from the field include 15 pipe lines, having a carrying capacity of 950 million cubic feet per day, and 55 casinghead plants with a combined capacity of 1,850,000,000 cubic feet. There are 25 carbon black plants which have a combined daily gas consumption capacity of 575,000,000 cubic feet.

The existing pipe line facilities were completed in 1930-31. At the present time, they are operating at about one-third of their combined capacity. In 1932, the first complete year of operation of all lines, they transported 97,168,645,000 cubic feet, with an average daily load of 266,215,460 cubic feet. In 1933, they transported 109,179,977,000 cubic feet, with an average daily load of 298,849,200 cubic feet. The increase in withdrawals to pipe lines in 1933 was 12 per cent.

When the present pipe line systems were completed, considering their capacities and the rate of withdrawals to casinghead plants, it was estimated that the Panhandle gas reserves would support the markets for a period of 25 years or longer. At that time, strenuous efforts were being made to enforce conservation measures. The Railroad Commission permitted the processing of casinghead gas only. The Commission forced one plant that was operating on dry gas to shut down, and shut in as gas wells many wells that produced large quantities of gas and small amounts of oil. Early in 1933, however, a special law was enacted by the Legislature permitting the production of 25 per cent of the open flow of dry gas wells for gasoline extraction. When no markets are available, the law allows the residue to be blown into the air. Although this law applies to sweet gas wells also, the law was originally drawn up for relief of "sour gas wells" and is commonly known as the "Sour Gas Law." Under the authority of the sour gas law, the Railroad Commission has abandoned all efforts at gas conservation. Immediately after this law's passage, public hearings

(Continued on Page 40)

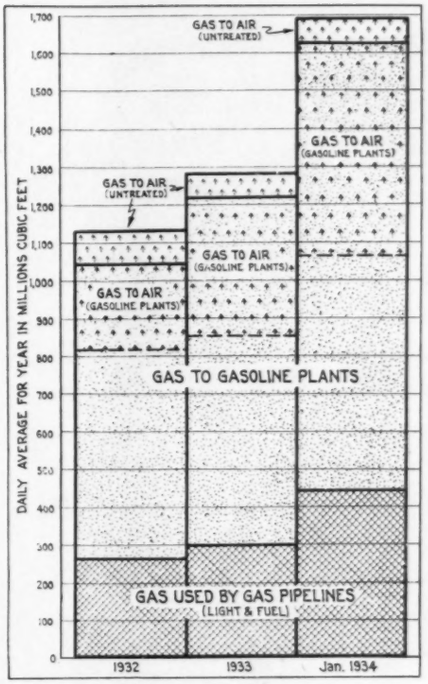


FIG. 2. Estimated Daily Averages. Gas Production in Texas Panhandle Field.

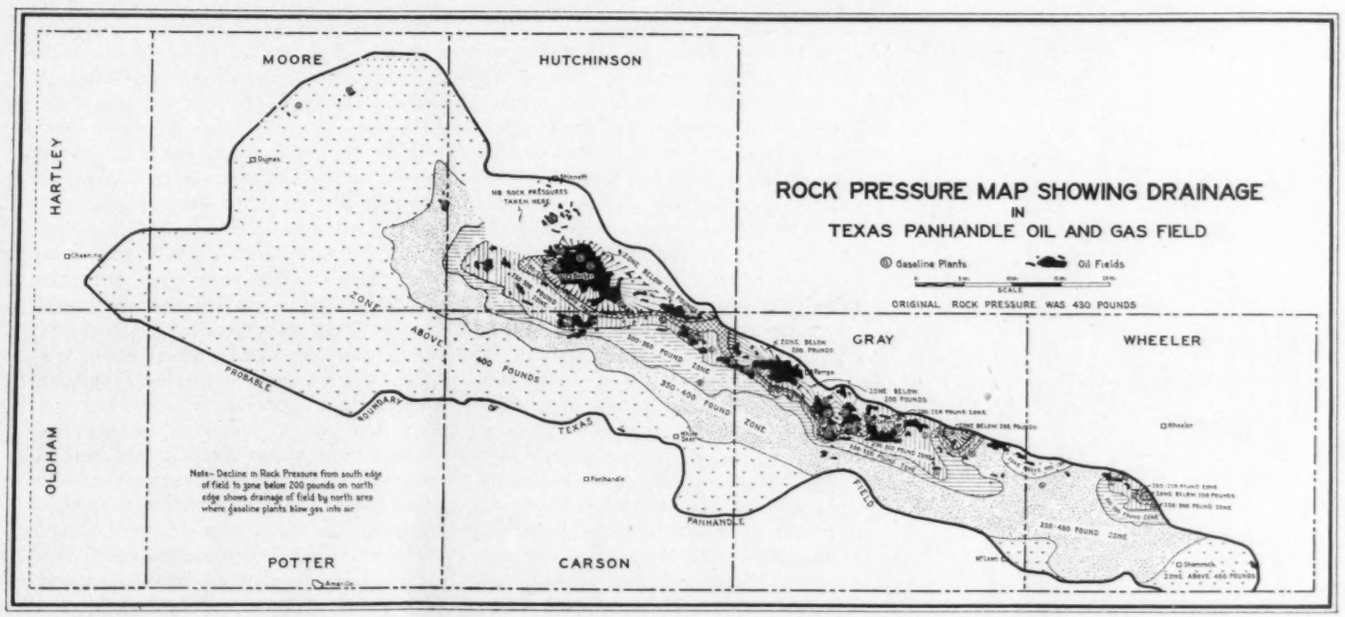


FIG. 3.

Beginning Tomorrow Morning
— — for a limited time, only
YOU CAN BUY A MODERN GAS RANGE WITH AN AUTOMATIC CLOCK CONTROL AT $40 LESS THAN THE REGULAR PRICE
UNUSUAL
Look for these points of merit in the new gas range you buy
She has one too!
at a record-breaking low price
it is a Roper and it is CLOCK-CONTROLLED
SOUTHERN COUNTIES G
"QUALITY REIGNS SUPREME"
BULLOCK'S
PARMELEE DOHRMANN
Latest Model
WEDGEWOOD
Automatic Gas Range
Specially Priced
Complete With Grayson Automatic Cooking Clock And Electric Lamp
$89.50
SEVENTH
6 More Days
TO SAVE $40 ON THIS
Wedgewood Range
WITH GRAYSON COOKING CLOCK
PRICE YOU PAY
$80.55
WE HAVE THEM ALL.
Immediate Delivery!
$5 DOWN
Barker Bros.

12,000 Ranges Sold

By H. E. DAVIDSON

CONFRONTED by the same problems that face other gas utilities throughout the United States, those of building load despite present day conditions and of holding it against increasing competition, the three companies which serve the greater part of Southern California, the Los Angeles Gas and Electric Corp., the Southern California Gas Co. and the Southern Counties Gas Co. of California, which serve a total of nearly 800,000 meters, developed a plan of joint cooperative action for the present year which is far more comprehensive than any previous effort. This plan is intended to insure maximum effectiveness and to prevent any variance of duplication of effort, and includes dealer financing, trade-in assistance for dealers removing electric equipment, and a series of sales promotions, the first of which featured the clock-controlled gas range.

This type of range was selected for the initial campaign because it possesses every element necessary to convenience and certainty of results in cooking, and therefore would build up the strongest resistance to replacement by competitive equipment, and for the same reason, would have the greatest advertising value to the gas industry. In addition, the clock-controlled range has a certain sales appeal which is lacking in ranges without the control, and which allowed a promotion of unusual power to be built around it.

After preliminary discussion between the various groups involved, including manufacturers, dealers and utilities, a plan was developed and put into effect for a clock-controlled range promotion during the months of February and March. During this period, the dealer was enabled to sell a clock-controlled range made by any of the cooperating manufacturers at the same price as the same model without the clock control. The offer, however, was limited to ranges with electric clock control which were A.G.A. approved, which sold for $89.50 or more after the manufacturer's established retail differential for the clock equipment (from $40 to $59) was deducted from the established retail sales price, and which were properly installed. Each sale made upon this basis was reported by the dealer to the manufacturer, who in turn reported it to the serving utility through a clearing house. The utility then made a field inspection to determine if the installation had been properly made, and in the event that all conditions had been complied with, so notified the manufacturer. The latter, with assistance from the utility, thereupon credited the dealer with the wholesale differential in price for the clock equipment, thus enabling him to make his full percentage of mark-up.

H. E. Davidson

The promotion was entered into with enthusiasm by practically all cooperating agencies, who devoted an unprecedented amount of newspaper display, radio and window trim advertising to featuring it. This, combined with the natural selling appeal of the offer, produced a rush of orders which even the most optimistic had not anticipated. After a few days' selling, all existing stocks were exhausted, and factories were started on overtime production. Orders were accepted upon the basis of future delivery, and before long a backlog of over 3000 range orders was built up. In order to reassure purchasers who had not received their ranges, the three utilities considered it advisable to run an advertisement in the leading Los Angeles papers headed: "A Promise. All Clock-

Clock-Controlled *in* Sixty Days

General Supervisor, Domestic Sales
Southern California Gas Company

Controlled Gas Range Orders Will Be Filled! But We Ask Your Patience On Delivery." However, with the plants of the clock control manufacturers and of the various range manufacturers working upon an increased production basis, the number of back orders was materially reduced although not eliminated, by the time the campaign was three-quarters completed.

In the final quarter, however, sales built up again, with the result that approximately 12,000 ranges were sold in the two months period. These ranges represent sales of over a million dollars, a volume of business of tremendous importance to range manufacturers and dealers. As valuable as are these results, however, there are others not so tangible, but which are of inestimable value to the gas industry in terms of public good-will and acceptance.

Undoubtedly the most important effect of this kind is the tremendous amount of advertising the latest type of gas range, and by inference, the gas industry, has received. The unprecedented amount of advertising of all kinds created widespread interest in the campaign, and made it the most successful and most discussed merchandising effort in years—the value of which to the industry can hardly be overestimated.

A second result is the building up of a strong spirit of cooperation between the various factors involved—a feeling which will make future efforts aimed at rapid load-building through joint merchandising much easier.

This campaign has also demonstrated to dealers and particularly the large department stores, that a gas appliance can be made the subject of a major merchandising effort comparable to and even surpassing those customarily conducted in other lines. In fact, one leading Los Angeles executive, nationally prominent in the merchandising field, stated "It is not exaggeration when I tell you that during my experience of over 20 years in the merchandising business I know of no merchandising campaign which has been quite so successful."

From the utility standpoint only, the promotion accomplished several valuable results, one of which is the replacement in good houses of thousands of obsolete gas ranges with those of the most modern type—a type which competition will find it difficult to displace, instead of comparatively easy, as with the superseded ones.

It seems quite logical after some consideration to assume that the promotion has a very definite and appreciable load-building value, although at first this may appear questionable. However, the old ranges which were replaced were generally of obsolete types and without oven control, so that results especially in baking, were uncertain to an extent sufficient to seriously reduce usage. Conversely, the thousands of clock-controlled ranges sold and installed, with their labor saving conveniences and surety of results, will inevitably be put to use to a degree unknown before.

Again, since the clock-controlled range permits cooking operations in the absence of the user to an extent impossible with the ordinary range, the large number of the former type which have been installed as a result of this campaign may logically be expected to increase gas load materially through absentee operation. Through use of the clock-controlled

(Continued on Page 29)

A Promise
All Clock-Controlled Gas Range orders will be filled!
but we ask your patience on delivery
Simple Things Endure
GAS COOKING
Burners Last the Life of the Range
There's always a touch of kindly magic in the home with a "MAGIC CHEF"
FEATURES OF THE MAGIC CHEF
NO EXTRA CHARGE
FOR THE CLOCK CONTROL
DURING THIS SPECIAL SALE!
Act quickly!
Modern Gas Ranges with Clock Control
at no extra cost
SALE ENDS MARCH 31st
Sells a Good Gas Range
COUNTIES GAS CO.
LOS ANGELES FURNITURE CO.
724 So. BROADWAY
Last 6 DAYS!
ESTATE
Clock-Controlled AUTOMATIC GAS RANGE
$80.55
Pay Only $5.00 Monthly!

- The Southern California clock-controlled range promotion was set against a background of specific advertising, joined in by dealers and utilities on a wholesale scale. Typical newspaper copy appears on these pages.

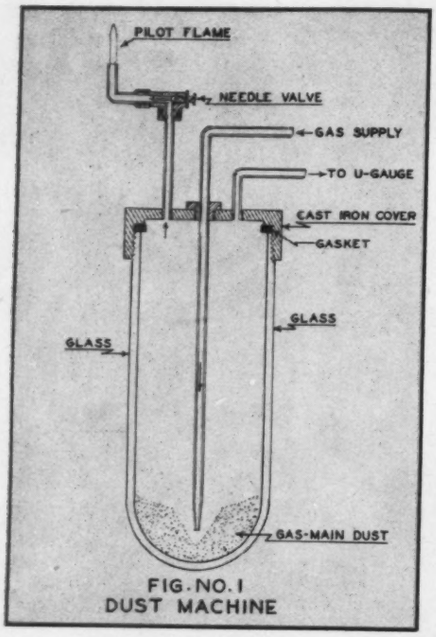


FIG. NO. 1
DUST MACHINE

Dust Stoppage of Pilot Orifices

THIS paper, which reports a study on the resistance to dust stoppage of various types of pilot orifices, was one of three discussions on the general subject of pilot light problems, presented on March 22 at the Pacific Coast Gas Association Technical Section's Spring Conference at Los Angeles. J. C. Gilbert, Southern Counties Gas Co., dealt with pilot light troubles resulting from distribution of natural gas containing hydrogen sulphide; C. W. Whaling of San Diego Consolidated Gas and Electric Co. discussed solution of pilot light problems encountered during his company's change-over to natural gas. Mr. Gilbert's paper is reviewed on Page 16 of this issue—*Editor.*

WITH the rapid increase in number, variety and complexity of automatic gas appliances, the continuity and proper functioning of pilot lights has become an essential. The tiny pilot flame may well be called the vital organ of the gas appliance, and on it depends the success or failure of the modern domestic utilization of gas. Any cause, therefore, that contributes to unexpected extinguishment of pilot lights demands prompt investigation and correction.

One of the most aggravating sources of trouble in pilot light maintenance is that of stoppage by gas main dust. This stoppage occurs sometimes gradually, sometimes suddenly, often several times in quick succession, and usually during the winter months when good appliance operation is most desirable and the service man is at his busiest.

It is obviously desirable to employ a pilot orifice that is adjustable for all conditions of gas composition and pressure. The needle valve and pilot cock are the orifices almost universally used. However, the advent of mixed and natural gas, with higher pressures and higher calorific values, has necessitated smaller and smaller openings in these control devices and, incidentally, openings that offer very little opportunity for the passage of foreign matter in the gas. It is probably a matter of common knowledge or easy understanding that a circular or fixed orifice of equal area would be more desirable, from the standpoint of dust stoppage, but it is perhaps not generally realized how much superior is this fixed orifice, or how unfortunate is the design of the needle valve or pilot cock.

Sources and Characteristics of Dust

The probable sources of dust, in order of importance in the average modern distribution system, are as follows:

1. Internal corrosion deposits formed during manufactured gas distribution, and later released by improved purification and dehydration methods, or distribution of mixed or straight natural gas.

2. Internal corrosion products brought in from transmission lines during periods of high velocity.

3. Mill scale, rust, etc., inside pipe when received from the mill and after lying in pipe yard.

4. Earth and other debris introduced into new lines during construction.

This dust has an analysis of approximately 75 per cent iron oxide, 10 per cent sand and clay, and 15 per cent moisture, oils and solid organic matter. It has a specific gravity of about 4 if water equals 1. The size of particles range from large, scaly masses to minute roughly shaped spheres of a diameter of 0.00001 inches or smaller. This latter dimension is of an order of magnitude only discernible with a high-power microscope and so light as to remain almost indefinitely suspended in the gas so that ordinarily it passes through the smallest orifice. Tests to be described later indicate that the range of particles with diameters from 0.0008 to 0.00002 inches are those that are ordinarily responsible for pilot stoppage. Larger particles are seldom carried to pilots because the low velocity of the small flow of gas will not keep them in suspension. Inasmuch as the large particles of dust, that can be readily seen and examined by microscope, are irregular and rough in form, it is reasonable to suppose that the very small particles are also rough, though probably to a lesser degree because they have suffered more impact; they cling together and, when poured in a pile, assume a very steep angle of repose; they form "drifts" that can readily plug a horizontal tube of relatively large diameter—such as the tube formed by removing the lead from a pencil; they resist any sharp change in direction of flow; they cling to sharp and/or rough edges.

Guy Corfield

Description of Dust Machine

As a preliminary to the study of orifices vs. dust, it was necessary to find some means of introducing dust into the gas in a controlled manner, or at least in such a way that all orifices under test would be treated alike. Fig. 1 shows a so-called "Dust Machine" developed for this purpose. Gas main dust, in the rounded bottom of the glass shell, is agitated by the downward impinging gas jet, the fine particles picked up by this same gas and carried to various orifices attached to short pipe nipples rising from the cast iron cover. Five orifices can be tested simultaneously, at an equalized and controlled pressure. If all orifices are started out on the same gas flow they will all be taking equal quantities of dust, which is being continuously generated by agitation and breaking-up of

By GUY CORFIELD

Chemist, Los Angeles Gas and Electric Corporation

larger particles and release of "fines" from the bottom. In addition to this, if the test is of long duration, periodic addition of fine dust can be made through the gas supply tube. All orifices were provided with one-eighth-inch pipe nipples as flame tips, on which burned yellow flames, and the height and time of extinguishment of the various flames provided a means of following the progress of dust stoppage.

Relative Speed of Dust Stoppage of Various Orifices

The main series of tests was made on orifices adjusted to pass one-half cubic foot of natural gas per hour at 7 inches water column pressure. This amount of gas burning quietly from a ¼-inch opening (⅛-inch pipe nipple) gives a yellow flame 1½ inches high. Orifice sizes to produce this flow are discussed later. It is sufficient now to say that this is reasonably representative of the size of the average domestic pilot. The data obtained are given in Table No. 1.

A few tests were made with orifices passing 1.5 cu. ft. per hour at 7 inches water pressure, and can be summarized as follows:

A pilot cock went out in 18 hours, and 21 hours, in two successive tests.

A needle valve with relatively small pin entry in the orifice became about half plugged in 12 days.

A circular fixed orifice showed no indication of stoppage.

A few miscellaneous tests will be discussed later.

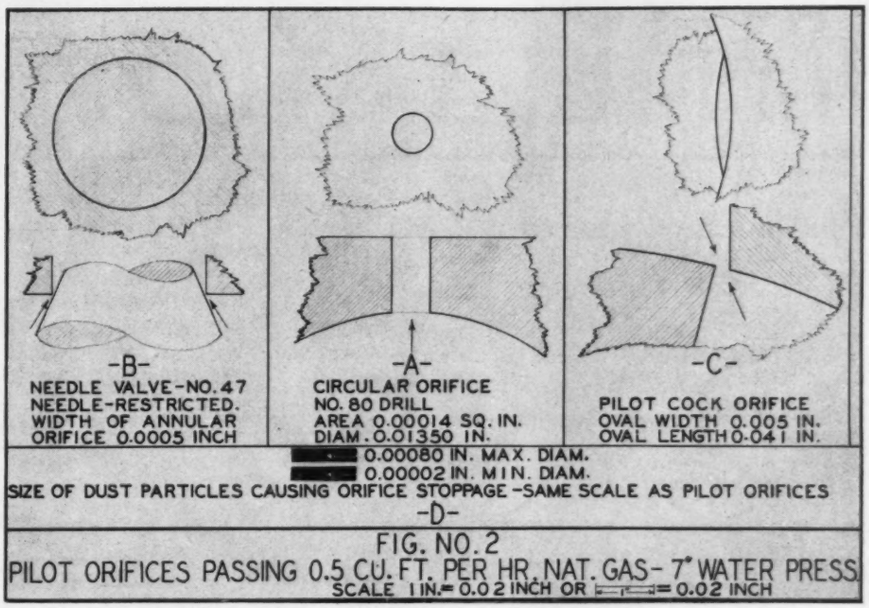

-B-
NEEDLE VALVE-NO. 47 NEEDLE-RESTRICTED. WIDTH OF ANNULAR ORIFICE 0.0005 INCH
-A-
CIRCULAR ORIFICE NO. 80 DRILL AREA 0.00014 SQ. IN. DIAM. 0.01350 IN.
-C-
PILOT COCK ORIFICE OVAL WIDTH 0.005 IN. OVAL LENGTH 0.041 IN.
0.00080 IN. MAX. DIAM.
0.00002 IN. MIN. DIAM.
SIZE OF DUST PARTICLES CAUSING ORIFICE STOPPAGE -SAME SCALE AS PILOT ORIFICES
-D-

FIG. NO. 2
PILOT ORIFICES PASSING 0.5 CU. FT. PER HR. NAT. GAS - 7" WATER PRESS.
SCALE 1 IN. = 0.02 INCH OR = 0.02 INCH

The conclusions drawn from these tests are that under an aggravated dust condition:

1. A pilot cock or needle valve will completely plug in approximately 2 days.
2. The pilot cock is more susceptible than the needle valve.
3. A combination of two pilot cocks or needle valve and pilot cock, will plug much faster than either alone.
4. A circular fixed orifice shows no tendency toward stoppage during a period of 12 days, or six times longer than the next best orifice.

Discussion of Reasons for Stoppage

When consideration is given to the relative shape and aperture size of the various pilot orifices, it is not difficult to arrive at seemingly reasonable explanation of their behavior. Fig. 2 shows the three types of orifice, and the maximum and minimum dust particles that are carried to them, all drawn to the same scale, the orifice opening in each case being such as to pass approximately 0.5 cu. ft. per hr. of natural gas at 7 inches water column pressure. The needle valve opening (B) and the pilot cock opening (C) have been calculated and drawn to exactly the same area as that of the circular opening (A). This introduces a slight error for the needle valve and pilot cock, as the discharge coefficients of the annular and oval openings, respectively, are different from that of the circle, so that they should be slightly larger. The error, however, is not great and has no significance in this discussion.

Drawing A shows the relative size of the circular orifice used, and the approximate angle of approach. In preparing this orifice, no care was taken to remove burrs or other roughness from the orifice, nor was any attention given to design from the standpoint of angle of approach.

Drawing B shows the very narrow annular orifice that results from constricting a relatively large opening with a large blunt needle. This orifice is a true dimensional reproduction of a needle valve taken from the pilot assembly of a new gas range.

It will be noted that the maximum size dust particle, shown in Drawing D, is larger than this orifice opening, so that ultimate stoppage is a foregone conclusion. Many needle valves now used in modern appliances have a still larger seat and needle which would make a still narrower annular slit. When it is considered that the needle will almost certainly not be centered, and that some roughness of edges is probable, it is difficult to imagine a more unfortunate design from the standpoint of dust passage.

Drawing C shows the orifice created by the standard ⅛-inch pilot cock. There are actually two such openings in

(Continued on Page 38)

TABLE NO. 1

Test No.	Total Hours	Time in Hours for Complete Dust Stoppage of: Needle Valve	Pilot Cock	*Double Pilot Cock	**Needle Valve and Pilot Cock	Circular Fixed Orifice
1	21	21	6	....	....	No stoppage
2	52	48	52	....	....	" "
3	45	45	....	41	....	" "
4	46	46	....	....	7	" "
5	21	21	....	....	4	" "

* Two pilot cocks in series; gas throttled to 1.5 cu. ft. per hr. in first and 0.5 cu. ft. per hr. in second.

** Needle valve and pilot cock in series; gas cut to 1.5 cu. ft. per hr. by needle valve and 0.5 cu. ft. per hr. by cock.

Note: During a total test time of approximately 12 days, the circular fixed orifice was undisturbed and no stoppage was evident. Time has not permitted a longer undisturbed test.

UTILIZATION

Pilot Stoppage Caused By Hydrogen Sulphide

● J. C. GILBERT, Southern Counties Gas Co. of California; addressing Spring Conference, Pacific Coast Gas Association, Technical Section, Los Angeles, March 22, 1934; topic "Stoppage of Pilots Due to Corrosion of Copper Tubing by Hydrogen Sulphide"—(Abstract):

PAPER describes difficulties experienced due to stoppage of pilot light tubes by hydrogen sulphide, and methods used to correct the trouble. An investigation of increasing pilot trouble encountered in one distribution district showed the difficulty to be largely caused by stoppage in the pilot tubes, the stoppage being a hard brown and black deposit usually found near end of supply tube or in pilot tip. This deposit formed on the sides of the tube and grew toward the center, diminishing the area and finally extinguishing the pilot flame; in some instances it would build up, from clean tube to stoppage, in 90 days.

J. C. Gilbert

Analysis showed the deposits to contain 72 per cent copper and 19 per cent sulphur, or practically pure cuprous sulphide. The distributed gas was then examined and found to contain an average of 3.9 grains of hydrogen sulphide per 100 cubic feet of gas, a considerable increase over analyses taken at an earlier date. It was also determined that the stoppage was confined to brass and copper tubing, orifices and valves, when subjected to heat from burners; even though the tips themselves were not subject to heat corrosion might be formed ahead of them in heated tubing and carried forward to cause stoppage.

Investigating metals to replace copper or brass, experiments were made with steel and aluminum tubing, and the latter finally decided upon because of its immunity to corrosion, convenient flexibility, and resistance to heat when not placed in direct flame. Manufacturers, jobbers and service men were requested to change pilot tubing to aluminum wherever trouble was encountered. This prevented recurrence of trouble where changes were made, but provided relatively slight relief because of the large number of appliances already equipped with copper, bronze and brass. It was therefore found necessary to approach the problem from another angle, that of purification of the gas to remove the hydrogen sulphide. To date, after about 60 days of purification, pilot stoppage from hydrogen sulphide has been reduced more than 50 per cent, and it is anticipated that within a few weeks this trouble will be rarely experienced.

An analysis of these stoppages is as follows:

Location of Pilot Stoppage

Tube and tip	44 %
Iron tube and brass tip	1
Copper tube and aluminum cap	.5
Copper tube only	32.8
Copper tube and brass tip	2.5
Tip only	11
Brass tube	.5
Burner pilot	.5
Valve or orifice	6.5

Appliances in Which Pilot Difficulties Were Encountered

Water heaters	60 %
Ranges	3.2
Furnaces	19.4
Floor furnaces	1.8
Radiators	5.5
Miscellaneous	2.3

The following conclusions are drawn:

1. That copper tubing should never be used for pilot lights for the reason that aluminum or other metals can be used at no greater expense and in case this trouble should be experienced in other localities there would be no occasion for stoppage.

2. That brass or bronze fittings should be kept out of the heat zone of the main burner and should be located as far as possible from this area.

3. Needle valve and pilot valve orifices are a means of obstruction and should not be used in pilot lines. A fixed orifice has always been found to be more satisfactory.

Water Heater Sales Through Remote Control

● THOMAS E. GRANT, American Gas Products Corp., Chicago, Ill.; addressing A. G. A. Mid-West Regional Gas Sales Conference, February 16, 1934—(Abstract):

UP to the present time little attention has been paid by the average gas company to promoting the sale of upstairs (remote) controls for tank water heaters. These controls are available as manually operated, electric and time types; they consist of valve attached to the heater with safety pilot for igniting the burner, thermostat to prevent overheating, and control or switch operated from upstairs (the heater being in the basement), in the kitchen or bathroom, or both; they are inexpensive and easy to install.

Thousands of tank water heaters are sold every year by agencies other than the utility companies. A survey in any community will undoubtedly disclose many installations where remote controls could be sold, and any reasonable expense to obtain this information would be well worthwhile.

Data from gas companies which have sold these controls over a long period of time agree that their use brings a substantial increase in gas sales for water heating. One company in the Middle West made an actual check on 500 installations, comparing the bills for one year, where these remote controls had been installed, against the previous year without controls, and the average increase was 1100 feet per month. If the pilot is estimated as 300 feet of this consumption it leaves 800 feet additional use of the heater because of the convenience of the control.

For many years the tank water heater was the back-bone of the water heating load; its promotion was abandoned or even discouraged during the more recent years of prosperity. At the present time it is impossible to sell all consumers automatic types and, while the efforts to sell automatic water heaters should by no means be lessened, a combined effort should be made to increase water heating load through the use of tank heater controls. This will promote convenience and comfort and render a service that will return dividends by keeping customers pleased with gas facilities and less likely to turn to competitive fuels.

In order to popularize these controls they should be sold on a basis of small monthly payments extended over a long period of time. A great majority of prospects will be able to purchase the device on this basis and will gladly pay for the convenience.

In building the house heating load, conversion burners play a very important part in educating the public to the use of automatic gas heat, and eventually gas designed equipment will replace them. In the same manner, the sale of remote controls will be a stepping stone,

in many instances, to 100 per cent service which can only be obtained through the use of the automatic water heater.

A tremendous opportunity exists for the sale of these controls; comparatively few have been installed and, generally speaking, people are not familiar with the fact that such a device is available. Proper publicity can be had in connection with other water heating advertisements. A demonstrating outfit can be easily carried so that it can be shown in the home and the simplicity of its operation will appeal to the customers.

a small amount of water—while the remainder have their heaters shut off completely. Of this latter class there are doubtless many who have returned to the hand-controlled circulating water heater with its attendant economy but lack of convenience, while others have had tank heaters installed on their storage heaters.

With such a picture confronting the industry, it appears that the circulating type water heater with remote control offers the best opportunity for sales promotional efforts. Many new types of remote controls for circulating water heaters are now being placed upon the market. One device now available can be set so that the heater will go on at a predetermined time. This feature obviates the necessity of rising at an early hour in order that hot water may be ready for morning bath or shave, even with the lowly tank heater.

In selling these remote controls the idea of *making one's own gas bill* is the most important feature to be stressed.

• J. D. DRUSE, Milwaukee Gas Light Co.; addressing A. G. A. Mid-West Regional Gas Sales Conference; topic "Water Heating Sales Through Upstairs Controls"—(Abstract):

IN the Spring of 1928 the Milwaukee Gas Light Co. was at the peak of promotional efforts on remote controls for gas-fired circulating water heaters. The prevailing opinion among Mid-West gas companies at this time was that the automatic storage type water heater was a better load builder. For several reasons the special efforts on remote controls were discontinued, but later developments brought renewed interest in sale of this equipment.

Analysis of potential market for water heaters, made by the company's meter readers in 1932 showed that out of a total of 140,000 consumers in metropolitan Milwaukee there were installed 80,000 gas-fired circulating tank heaters and 10,000 automatic gas-fired heaters—and that 50,000 homes were without any kind of running hot water service, 10,000 of these having no suitable plumbing for water heater installation.

Recognizing that these 50,000 homes were probably in straightened circumstances and therefore not prospects for automatic heaters, a special sales campaign was again inaugurated to promote circulating water heaters and remote controls. This campaign included assistance of the regular employees together with a special crew of straight commission salesmen, both groups being well compensated for their efforts; a substantial reduction in prices was also arranged. During the five months, starting June 1932, of this special campaign, the total sales were 1101 circulating tank heaters, 112 hand-controlled storage units, 91 automatic storage type heaters, 236 clock type remote controls, and 33 pull-up type controls.

At the present time a great many people who a few years ago were able to purchase and operate automatic equipment are now unable to afford such advantages. A large number of these people are now hand-operating their storage type heaters—a very inefficient method, since the entire tank must be heated for

TRANSMISSION

Effect of Cathodic Protection on Coatings

• A. B. ALLYNE, Southern Counties Gas Co. of California; addressing Spring Conference, Pacific Coast Gas Association, Technical Section, Los Angeles, March 23, 1934; topic "The Effect of Electrical Drainage on Bituminous Pipe Coatings"—(Abstract):

EVIDENCE is gradually accumulating which demonstrates that corrosion of steel pipe covered with bituminous coating can be greatly reduced if the pipe is held negative to the soil by electrical drainage. There is, however, little or no evidence published to indicate what effect continuous electrical drainage will have on bituminous coatings. With this question in mind a series of laboratory tests were started about six months ago to determine the negative potential that can be applied to a pipe line without damaging the protective coating.

A. B. Allyne

Work completed to date includes tests of asphalt and coal tar coated steel samples in 10 per cent caustic soda solution in which specimens were kept at 0.0 and 0.3 volts below the potential of the solution, and tests in which similar samples were exposed to two different soils and maintained at 0.0, 0.3, and 4.3 volts below soil potential. Additional tests are being conducted at the present time in soils with the samples held at approximately 1.0 volt below soil potential.

One-eighth inch polished steel plates, 2x6-inch, were coated by heating and immersion with two layers of bitumen. In all but one set of tests the samples were not primed. Electrical resistance of all coatings was over 10 million ohms per square foot before commencement of test. Immersion in liquid or soil was made in 1-gallon crocks, with test specimens spaced symmetrically near the edge, and carbon anode in the center. The top inch of each plate was left bare, providing a junction of bare and coated metal, and a small break in the bitumen was made near the bottom to stimulate a field application flaw.

In some of the tests, under the high voltage, extreme action was observed, to the point where the coating came entirely off the plate, and was badly honeycombed. In other cases more moderate action took place, such as localized blistering, and loss of bond at the exposed point and the top of the specimen where the bare metal began. In some instances there appeared to be no deterioration. Fig. 1 shows two sets of the coated samples, the left hand pair in each row being asphalt and the right hand pair coal tar. Test periods ranged from 22 to 195 days.

The writer's conclusions are as follows:

Although our laboratory work covers a relatively short period of time, it is felt that certain observations and conclusions can be made from the results obtained in the above described tests. They are as follows:

1. Asphaltic coatings appear to lose their bond rapidly in the vicinity of bare metal spots on a pipe buried in the soil. This applies when no electrical protection is used as well as when the samples were kept at 0.3 and 4.3 volts below soil potential.

FIG. 1.

2. Coal tar coatings lost their bond, within the limits of this series of tests, when the samples were kept at 4.3 volts below soil potential but did not behave in this manner when kept at 0.0 or 0.3 volts below soil potential.

3. When the coated specimens were subjected to a potential of 4.3 volts below the soil potential both asphalt and coal tar lost their bond, blistered, and were pushed from the metal surface.

4. With the coal tar samples at 0.3 volts below the soil potential there seemed to be no greater breakdown of the coating than occurred when no electrical drainage was used. With the asphalt samples, a slightly greater loss of bond occurred when they were held at 0.3 volts below soil potential than when no voltage was applied.

5. The electrical resistance of both coal tar and asphalt coatings decreases when buried in soils and seems to be independent of whether or not the pipe is cathodically protected.

6. The results observed were the same for the two soils used in these tests.

7. The asphalt coated samples that were primed before coating suffered a greater loss of bond than those that were not primed, the primer adhering to the coating, and not the pipe. The primed coal tar coated ones behaved no differently than the unprimed.

West Texas Managers Meet

Managers of the Community Natural Gas Co.'s west Texas properties met in Abilene, Texas, March 6. The meeting included approximately 100 employees of the company from 20 towns within a radius of 100 miles of Abilene.

Electrolysis Testing on Wrapped Pipe

● **T. C. FRONMULLER, Pacific Gas and Electric Co.; addressing Spring Conference, Pacific Coast Gas Association, Technical Section, Los Angeles, March 22, 1934; topic "Methods of Electrolysis Testing on Covered Pipe"—(Abstract):**

NO hard and fast rules can be followed for the accurate determination of electrolysis along gas transmission lines. Varying field conditions such as topography of country, character of soils and presence of electric railways, require a changing technique.

In simplest cases the drop of potential method is sufficient to discover pipe line electric currents, provided readings are taken close enough together to avoid missing any positive sections. The frequent readings, however, greatly increase the cost of the survey.

Where rapidly fluctuating stray railway currents are involved, and 24-hour recording charts are not possible, simultaneous readings at both stations are required; if stations are far apart a signal system is necessary.

Best results can be obtained by use of McCollum earth current meter in conjunction with potential drop measurements, the earth current meter test being made at one or more points between drop of potential stations. In this way if a loss of current is indicated by the pipe line current measurements, the positive section can be easily located and its

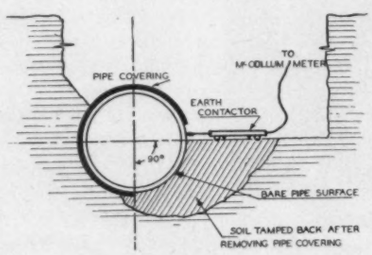


FIG. 1.

limits outlined. A loss in pipe line current between two points should show corresponding positive earth currents leaving the pipe. If not, either the measurements are in error or section of positive pipe has not been discovered. If the pipe line current measurements are made too far apart, soil currents of one polarity may be so overbalanced by those of opposite polarity that their presence is not indicated. The distance between pipe current measurements, and the number of earth current measurements taken between them, must be varied to suit field conditions. A maximum interval of 1 mile for the former with a McCollum measurement every half mile is usually sufficient for a transmission line through open and very even country.

The constants of the McCollum instrument as developed for bare pipe cannot be used when testing on covered pipe. However, by proper procedure and interpretation, if the insulation is purposely removed from the pipe, and the earth replaced and in contact with the exposed metal, an earth current meter test will show the rate at which the current is lost or gained at the other bare spots.

Instrument readings are affected by the size of the pipe covering strip removed, so that this should be standardized. An opening with a longitudinal dimension of 12 inches by one quarter of the pipe circumference in width is a good standard for field use. It is small enough to avoid local electrolysis and a minimum of time is spent in digging the trench and preparing the pipe for test. Fig. 1 shows a pipe prepared in this manner for soil current test. For such an opening, regardless of pipe size, the McCollum meter constant is as follows:

9-in. contactor.....$R = 8.2 \times 1.10 = 9.0$
4½-in. contactor.....$R = 30.0$

and soil current in milliamperes per sq. ft. of pipe surface equals

$$R\,D_e\,\frac{I_e}{D_e}$$

where

R = meter constant
D_e = meter deflection in millivolts
I_e = battery current through contactor in milliamperes
D_e = meter deflection due to I_e

T. P. Jenkins Wins P. S. E. A. Suggestion Contest

T. P. Jenkins, superintendent of gas distribution in the Pacific Gas and Electric Co.'s San Joaquin Division, has been awarded first prize of $100 by the Pacific Service Employees Association, for developing a method of producing increased gas pressure in the mains by the use of modified standard equipment. Approximately 180 contestants participated.

E. B. Ladlow Granted Permit for Line to Halstead, Kansas

B. E. Ladlow and associates have been granted a certificate of convenience by the Kansas Corporation Commission to operate a pipe line for service of natural gas to Halstead, Kansas, which has voted a $30,000 bond issue to build a distributing system. The pipe line firm will also sell gas directly for industrial purposes.

DISTRIBUTION

Analysis of Consumer Complaint Frequency

● **R. V. DAVIS, Los Angeles Gas and Electric Corp.; addressing Spring Conference, Pacific Coast Gas Association, Technical Section, Los Angeles, March 22, 1934—(Abstract):**

IN a study of consumer service records for the year 1933 the names of approximately 10,000 consumers residing in a representative section of the Los Angeles territory were listed and all Better Service Orders (Complaint Orders) completed during the year within this group of consumers were analyzed.

There were two major purposes for this study; first, to determine if the reading and examination of Better Service Orders would reveal sufficient information to indicate the way in which unnecessary service calls could be eliminated in the future. The time thus saved could then be employed rendering service to more than 50 per cent of the consumers whose only contact with the company during the year had been via bill collectors. The second purpose of this survey was to ascertain if all the information concerning the appliances and service was recorded on the Better Service Order by the employee rendering that service. If important data were not being recorded, what steps would be necessary to secure them on these forms?

Table No. 1 shows the summary of consumer service records studied after this work had been completed.

Personal interviews were held with consumers who had received three or more service calls during the year, as well as with those receiving no service calls during the same period of time. This interview permitted checking by inspection whether the information on the Better Service Order was complete, and determining why three or more service calls had been made—i.e., whether because of inefficient workmanship, obsolete appliances, insufficient appliances, a poor understanding of appliance operation, monetary difficulties, or just a chronic complainer. This personal interview on the premises also permitted determination of whether one call on this type of consumer could eliminate future service calls, if made by a man qualified to explain appliance operation, rates, existing unsatisfactory conditions, policies of the company, etc., ultimately reducing operating expense. Interviews with consumers having received no service calls disclosed the kind and condition of appliances utilized by them, their attitude toward the company and its policies, and why they had not requested the service. Every interview held with a consumer, whether he had used the service or not, provided the opportunity to build gas load by tactfully attempting to replace old, worn out, or obsolete gas appliances with modern ones. It was a means of securing interested future gas appliance prospects, and finally, of spreading the gospel of modern gas service.

The work has not progressed to a point where any definite conclusions can be drawn. The study, however, indicated that the present Better Service Order could be redesigned to simplify the recording of information and insure a more complete report of conditions in the consumers' homes.

Indicating the value of this type of consumer study, the following facts were obtained in an analysis of 55 interviews with customers who had received no service calls:

4 consumers did not desire appliance inspection.

9 consumers were not aware of free appliance adjustments.

13 consumers were considering electric appliances.

All consumers were satisfied with Corporation service and policies.

Possible prospects for the following appliances were obtained: 2 ranges; 4 water heaters; 6 space heaters; 3 Electrolux; 1 circulator sold and installed.

From 28 interviews with consumers who had received three or more service calls the following was disclosed:

6 consumers were not satisfied with bills or service.

Service calls which could possibly have been eliminated:

2 service calls necessary to adjust a new range.

3 service calls to eliminate slight odor from heating equipment.

3 service calls to discover that oven valve was defective.

5 consumers did not understand appliance operation.

Possible prospects for the following appliances were obtained: 2 ranges; 2 water heaters; 1 space heater; 2 Electrolux.

TABLE NO. 1. SUMMARY OF 10,033 CONSUMER SERVICE RECORDS STUDIED

Number of Service Calls Received by Consumers						Number and Kind of Orders				
None	1	2	3	4	More	Reg.	Leak	High Bill	Light Pilot	Misc.
5,905	2,702	945	310	99	72	4,414	980	601	220	245

41.14% of the consumers whose service records were studied received one or more calls.
58.86% of them received no service calls.

Classification of Orders by Percentages

Regulation of Appliances	68.3%
Leaks	15.2%
High Bill Complaint	9.3%
Light Pilot	3.4%
Miscellaneous (No gas, Electrolux, etc.)	3.8%

Distribution Economics For Changing Conditions

● **E. H. EACKER, Assistant to Engineer of Distribution, Boston Consolidated Gas Co.; addressing Annual Business Conference of New England Gas Association, February, 1934—(Abstract):**

THE major problems of distribution today are: (1) the providing of a flexible system; (2) the providing of uniform pressures; (3) the carrying of large quantities of gas to outlying districts and suburbs; (4) the reduction in capital costs; (5) reduction in operating costs; and (6) the providing of satisfactory service.

Movement of population within cities and towns results in complete changes in the character of sections and their demand for gas. Highest type residential sections close to the present business district have deteriorated, and demands, originally low in the outlying communities, have become greater and greater. Large low pressure feeder and distributor mains in the downtown areas are operating at low capacity and smaller feeders and distributors in outlying areas are becoming overloaded. Increased activity in space heating, water heating, and industrial loads, will create demands in new areas and it should be possible to take care of these demands in increment steps without large expenditures for new mains.

The industry today is stressing the use of automatic apparatus with small pilots. Increased sales and customer satisfaction call for efficient operation of this equipment, which can only be obtained with uniform pressure. It is therefore imperative that pressures at the consumer's appliances be kept uniform at all times—uniformity being more important than the actual degree of pressure.

Over the past four years the trend of investment per customer and per dollar of gross revenue has been increasing. The shifting of population has caused duplication of capital investment as far as our customers are concerned. As the population becomes more stabilized such movements will further tend to duplicate investment, leaving the large part of our system in a relatively inactive condition unless the situation is carefully watched. It is only by reducing expenditures in the older sections where the demand for gas has decreased that we can keep the total capitalization at a reasonable value per consumer.

Operating costs are influenced to a large extent by the original system design. Inadequate systems require more servicing. Cast-iron mains, subject to heavy traffic vibration unless laid to a considerable depth, are subject to breaks. This is aggravated by the large increase in the number of underground structures. The use of steel mains at less depths eliminates the question of breakage and lowers maintenance cost due to breaks. The use of small-size steel mains on each side of a street eliminates paving. Even if these mains have to be laid in the sidewalk, the cost will be considerably less than if laid in the permanent paving of the street proper. Bell and spigot joints, made up of lead or cement, should be eliminated as rapidly as possible. Over a period of years, these joints are bound to leak. The mechanical joint has been perfected to a point where it can be used safely in all locations, and it provides a certain amount of flexibility which may prevent expansion and contraction breaks such as are common with bell and spigot lead or cement joints. There is no justification in utilizing a joint that we know will eventually leak, when a joint that will remain tight can be obtained at a reasonable price. Every effort should be made to utilize new equipment and methods.

More than ever the public is demanding satisfactory service. The greater use of automatic appliances with special heating controls demands special servicing attention. This servicing calls for trained employees. The training of employees for this work should be in the hands of competent instructors and should not be left to other workmen. Above all, the response to requests for service should be prompt.

Wins Sales Essay Contest

J. B. Hodgkins, Sacramento Division of the Pacific Gas and Electric Co., San Francisco, Calif., has been announced as the winner of the 1933 R. E. Fisher Contest—a sales essay competition for company dealer sales promotion representatives and division sales managers. R. E. Fisher is vice-president in charge of public relations and sales for P. G. and E.

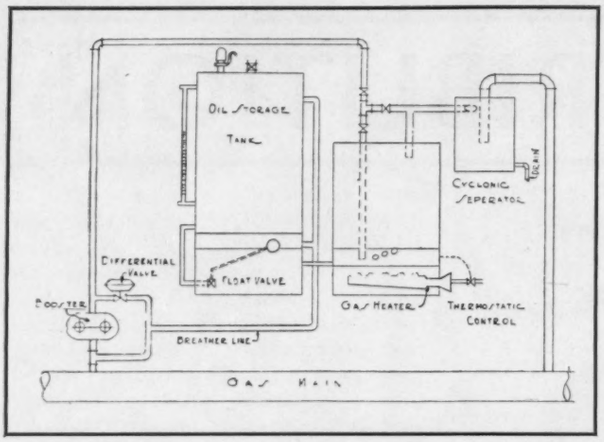


FIG. 1. (Above) Line diagram showing construction and operation of hot oil fogger.

FIG. 2. (At right) Diagram of atomizing type fogger.

Oil Fogging Methods and Results

● **L. W. TUTTLE, Public Service Co. of Northern Illinois; addressing Mid-West Gas School Conference, Iowa State College, November, 1933; topic "Oil Fogging Methods and Results"—(Abstract):**

OIL fogging injects into the gas minute particles of oil which wet the sides of the mains, tend to hold the rust and dirt in place, tighten bell and spigot joints and aid in keeping meter diaphragms soft and pliable.

General methods of producing fog are (1) hot fogger (shown in Fig. 1), which heats oil, which is injected into the gas and condenses, and (2) atomizing fogger, which sprays oil into the gas with high-velocity gas jet (shown in Fig. 2).

Quantity of oil fog in gas is detected and measured by (1) impinging gas on glass plate through small orifice (2) putting red dye in oil and passing gas through filter paper (3) measuring increase in weight of filter paper through which gas is passed.

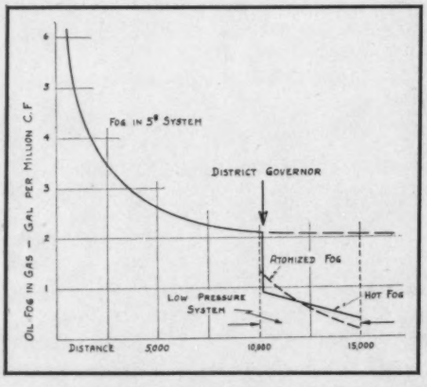


FIG. 3. Comparison of hot fog and atomized fog.

The oil fog particles that will stay in suspension for any appreciable time are very minute, with a diameter of less than .0004 inch. The number that remain in the gas, and the distance they will travel, depend upon the velocity through the mains, so that it may be possible to fog the extremities of the system only at times of peak velocity. The hot fogger, suitable for central station installation, will inject about 8 gallons of oil per MM cu. ft. After the gas has gone about 2 miles there will only be about 2 gallons per MM left in suspension, which fog, however, will be highly persistent, unless forced to pass through a regulator, in which event about half will be lost. The foregoing is shown graphically in Fig. 3.

Considerable fog is lost through district governors due to removal of large particles and evaporation of small ones. Both hot and atomizing types have their merits; in general, if large system is to be fogged, hot type is best at central supply points and atomizing type in district governor pits to boost the initial fog concentration.

Observed that the maximum time of suspension of fog is about 90 minutes; that when the send-out is 0.3 of the volume of the system the gas will just reach the extreme of the system in its life of 90 minutes; that a fogging rate of 3 gallons of oil per million is a satisfactory rate.

J. H. Duke Awarded Electrolux

J. H. Duke, manager of the Ennis, Texas, office of Municipal Gas Co., which won first prize in the 1933 "ice cube" contest conducted by the American Gas Association Refrigeration Committee, has been awarded an Electrolux for his own home for having personally sold more than 55 air-cooled Electrolux refrigerators in 1933.

NEW BUSINESS

Putting Idle Equipment Back to Work

● PRESTON D. GARDNER, Public Service Electric and Gas Co., Camden, N. J., addressing New Jersey Gas Association, 23rd Annual Convention, Trenton, N. J., March 23, 1934—(Abstract):

A STUDY conducted by the Accounting Committee of the New Jersey Gas Association brings to light these facts in reference to idle service and meter equipment in New Jersey:

Vacant properties range from 4 per cent to 150 per cent above normal pre-depression conditions, due to families doubling up, unfit housing conditions, etc.

Many companies still use prepayment meters in considerable number and find them valuable for saving customers having delinquent accounts.

Of 18 properties reporting, five remove meters when service is discontinued.

A large percentage of idle equipment is due to use of less desirable fuels, under economic pressure.

It is far easier to hold a customer than to reconnect him after discontinuance, particularly when appliances for other fuels have been purchased. One property reduced discontinuances 87½ per cent by tactful special handling of delinquents.

One company found that 43 per cent of those discontinuing direct service, used the company's service by living with relatives or through relief agencies, or by changing their names and reapplying for service, or giving out-of-town previous addresses.

There has been comparatively little increase in stealing or subterfuge in securing service.

Every company reporting in the New Jersey study has a definite plan for endeavoring to reconnect its idle equipment.

Plan 1: Bill deliverers stop at each house for which they have no bill; endeavor to find out the conditions and, if occupied, interest the party living there in service. A sales department representative follows up those interested or not seen by the bill deliverer.

Plan 2: Original calls on all inactive premises by representatives of the sales department on special canvasses.

Plan 3: Original calls by special collectors.

Plan 4: Those still using some prepayment meters have induced customers to continue to use or resume their use of service with a high rate wheel until any deliquency is made up.

What Are the Functions of a Sales Department?

● D. H. LEVAN, Jacksonville Gas Co., Jacksonville, Fla.; addressing Southern Gas Association and A. G. A. Southern-Southwestern Regional Sales Conference, Memphis, Tenn., March 22; topic "Operating Sales Departments on a Load Building Basis Rather Than on an Appliance Merchandising Basis."—(Abstract):

FOR the past two or three years unusual effort has been required to *hold* business, rather than expanding business. In the face of this situation some companies have been so shortsighted as to curtail the manpower of their promotion department, which has cost them business that might have been retained.

There are many customers who will come back on the lines with improving business, if promotion departments will keep constantly in touch with them. It is as essential to schedule this type of work in promotion departments as it is to maintain merchandise sales activities.

Most gas utilities have shown reduction in domestic business in recent years, partially due to insufficient promotion for gas in this field. We should capitalize upon the tremendous improvement in our domestic appliances in the past three or four years. For example, in this period gas range improvements have rendered 75 per cent of the ranges on our lines obsolete.

Automatic hot water service must be taken out of the luxury class for the customer of relatively small income. The man earning $150 a month or less, who in many cases is a tenant, cannot be expected to pay from $50 to $100 for an automatic hot water system and buy it over a 12- or 18-month period in addition to his gas bill. To reach this type of customer with automatic hot water service we must sell equipment for approximately $1 a month, and with a gas bill not exceeding $2 or $3 a month.

Gas appliance salesmen have usually been paid on a percentage basis, generally with a guaranteed salary. This has directed their efforts at selling merchandise of maximum commission, with little thought to related company operations. Plans must be devised to compensate the salesman for retaining gas accounts, and handling complaints on equipment and service.

Where such efforts have not yet been conducted the sales department should be utilized in a thorough survey of all premises now served, and if they are prepared to sell gas service rather than merely merchandise, the new load such a survey will uncover will be surprising.

● W. E. PARROTT, Memphis Power and Light Co., Memphis, Tenn.; discussion on topic of preceding paper, given at Memphis Conference—(Abstract):

GAS company salesmen may well be termed gas service salesmen, which conception places upon them the following responsibilities:

Calling on all new customers immediately following application for service to supply information on service and company policies.

Selling new appliances, and assisting in dealer sales efforts.

Having basic knowledge on appliances, and on cost of operating them.

Seeing that inactive equipment is put back to use.

Giving effective attention to high bill complaints and correcting errors for service and accounting routine.

Making appointments for company home economist where these are needed by customer.

A straight salary, adjusted at frequent intervals to bear a definite relation to estimated annual revenue which the salesman is able to add or retain in his territory, represents the best compensation plan. Salary adjustments might be made two or three times yearly, and a ratio of $3 estimated annual revenue per month per $1 of monthly salary would seem to be a reasonable average.

In estimating the annual revenue credit to the account of the service salesman proper allowance should be made for the assistance which he renders toward dealer sales as well as company sales, and for his service in reconnecting gas appliances now installed but not in use. Likewise his services in retaining gas business about to be lost to competition.

In metropolitan areas, where numerous salesmen are employed with adequate supervision, definite territory assignments should be made containing roughly 2000 customers, which would permit the salesman to cover his area three to four times yearly. Definite territory assignment should also be made in the smaller more widespread areas, with salesmen reporting through local managers and representatives. Service salesmen should be responsible for development of the gas load and for company relations with customers in their territories. Supervised canvass surveys of each territory should be made by the salesmen three or four times a year. This provides a constant market analysis of each territory and frequent opportunities to remove customer misunderstandings.

Pacific Coast Gas Association

Managing Director: Clifford Johnstone
Association Headquarters:
447 Sutter Street, San Francisco

President: George P. Egleston
General Manager, H. R. Basford Co.,
San Francisco

Review of Spring Technical Conference

THE annual Spring Conference of the Technical Section, Pacific Coast Gas Association, took place in Los Angeles on March 22 and 23. F. A. Hough, general chairman of the Section, reports an attendance of over 200 and very satisfactory progress in the series of studies being made by technical committees this year.

Particularly interesting, because new to the section, were the discussions of the Utilization Committee. This committee was formed this year to study the technical aspects of combustion and appliance design, with Frank Wills, engineer of production, Pacific Gas and Electric Co. as its first chairman. Mr. Wills reported the organization of several subcommittees dealing with installation codes, appliance servicing, pilot light designs and other timely subjects.

PILOT LIGHTS

C. W. Whaling of the San Diego Consolidated Gas and Electric Co. read a paper describing his experience with pilot lights arising from a recent change over to natural gas. After considerable investigation and experiment the company has now standardized on blue flame pilot tips and finds them to be highly satisfactory on most appliances. A fixed orifice is used when possible, as needle valves have a tendency to clog. Papers on pilot troubles, by J. C. Gilbert and Guy Corfield, are reviewed elsewhere in this issue of *Western Gas*. A paper by L. O. Howell on Large Capacity Water Heating Systems will appear in May.

SOIL CORROSION

The Natural Gas Transmission Committee, headed by P. E. Beckman, Pacific Gas and Electric Co., reported progress on its studies of internal and soil corrosion, compressor maintenance and large volume measurement. A. B. Allyne's study of electrical drainage and T. C. Fronmuller's report on electrolysis testing of covered pipe are reviewed elsewhere in this issue. W. R. Schneider, chairman of the Committee on Soil Corrosion, presented a valuable study on the use of vertical and horizontal ground rods for cathodic protection describing the advantages and disadvantages of each type. Guy Corfield presented the results of an investigation of the effect of soil moisture on soil stress which reaches the conclusion that no soil stress is to be feared until a soil is approximately half dried. From the half dry point to the dry point soil stress is inversely proportional to moisture content.

COMPRESSOR STATIONS

A. B. Newby, chairman of the Compressor Station Committee, reported on several projects being studied by the committee. D. H. Toler of the Industrial Fuel Supply Co., described a method of calibrating gas engine mixing valves to secure uniform settings at the point of highest efficiency. Lines are inscribed on the adjusting wheel of the mixing valve, and these are calibrated carefully by taking a series of indicator cards.

T. C. Wallace described observations on piston ring life made at the Ventura compressor plant of the Southern Counties Gas Co. On the type of single acting engines in use there the fire ring life is about three years plus and the power seal ring life about seven years.

INTERNAL CORROSION

A. B. Allyne, chairman of the Committee on Internal Corrosion, reported several projects under way including wet and dry bulb thermometry, the design of water and dust separators, dehydration by atmospheric cooling, by absorption and by refrigeration. Brief progress reports were made on each of these subjects. Mr. Allyne also read a paper on the recent installation of an iron oxide purifier to remove hydrogen sulphide from the Venice field natural gas. The results will be published by the committee after a sufficient time has elapsed to afford reliable operating data.

DISTRIBUTION

The Distribution Committee, A. R. Bailey, Coast Counties Gas & Electric Co., chairman, reported progress on a number of studies, including the effect of humidity on meter diaphrams, the maintenance of curb meters, domestic meter proving, pressure control, and service connections to cast iron mains.

W. M. Henderson, chairman of the committee on the development of a procedure to meet major interruptions to gas service, presented a very interesting discussion on earthquakes. N. L. Hoff, Los Angeles Gas and Electric Corp., described what is known about the cause and history of earthquakes, which Dr. Harry O. Wood, Director of the Seismological Laboratory, Carnegie Institute, supplemented with many details. California has been the scene of many major tectonic earthquakes, and while no way has been found to prophesy their occurance in advance, experience has shown that we may expect about eight major earthquakes per century. By careful design of structures and adequate planning of emergency procedure damage and loss of life can be rendered negligible even in populous areas.

The next meeting of the Technical Section will take place at the Northwest Regional Conference at Portland, at which time the Production Committee, F. C. Hawks, chairman, will render its final report.

Coast Office Opened by Gas Appliances Institute

MAKING effective the plan which it announced some weeks ago to provide facilities on the Coast for expeditious clearing of local matters of code compliance, Gas Appliances Institute, as Code Authority for the Gas Appliances and Apparatus Industry, recently established offices in San Francisco and Los Angeles, under the management of Carl A. Swigart.

Carl A. Swigart

The offices are located in Room 731, No. 447 Sutter St., San Francisco, and Room 1009, No. 810 South Flower St., Los Angeles. Complete files of published prices will be maintained and the offices will cooperate with the Pacific Coast Administrative Committee to secure general compliance with code regulations from all employers in the industry located in the Pacific Coast Division comprising Wash-

ington, Oregon, California, Idaho, Utah, Nevada and Arizona.

Mr. Swigart has for some time been identified with the Pacific Coast Gas Association as its Trade Relations Representative, and will continue the work in connection with his new duties.

Northwest Conference at Portland, June 21-22

THE Association has accepted the invitation of Paul B. McKee, president of the Portland Gas and Coke Co., to hold its 1934 Northwest Regional Conference in Portland. June 21 and 22 have been selected as dates for the conference.

The Northwest session has become one of the most interesting and constructive events in the Association program, and a program for the two-day meeting is now in progress of development which will make the 1934 conference no exception.

Portland Gas & Coke Co. Opens Oregon City Branch Office

B. H. Parkinson, commercial manager of the Portland (Ore.) Gas and Coke Company, has announced the opening of the Clackamas County district office of the company in the Hogg Bros. Department Store Building, Oregon City, Ore. C. W. Nash, former sales representative of the company in the Oregon City district, has been appointed branch manager. Displays of gas ranges, water heaters and other gas equipment will be maintained by Hogg Bros. in space adjacent to the branch office.

Mesa, Ariz. Wants Natural Gas

Mesa, Ariz., has applied to the Public Works administration for a loan of $65,000 to install additional facilities on its municipal gas system. The city plans to obtain natural gas supply from the Western Gas Co., El Paso, Texas, through a tap line on the main artery at a location near Yaqui, southwest of Tempe. G. I. McFarland is manager of utilities for the city.

Harvey Forward with Tucson Utility

Harvey Forward, formerly with the Southern Union Pipe Line Co., Albuquerque, N. Mex., has joined the staff of the Tucson (Ariz.) Gas, Electric Light & Power Co., and is in charge of domestic merchandise sales for the company.

Coast Counties Service Pins

H. L. Farrar, president of Coast Counties Gas and Electric Co., in March presented service pins to several of the company employees. Among them was a 35-year diamond pin to George Dunn and a 25-year pin to A. E. Strong, general superintendent.

Sales-Advertising Sessions a Success

UNDER the leadership of Pierre Vinet, chairman of the Commercial Section, and Douglas Buckler, chairman of the Publicity and Advertising Section, sales and advertising men connected with Pacific Coast gas companies and appliance manufacturers met in Los Angeles on March 29 and 30. The entire two-day period was devoted to an intensive discussion of new business problems, a great deal being said upon the inter-dependence of selling and advertising. The meeting was opened by George P. Egleston, president of the Pacific Coast Gas Association, who sounded a serious note by saying that the future growth of the gas industry depended upon the enthusiasm and hard work of the industry's salesmen. He asked the Association's committees to produce plans for direct and concrete sales and advertising programs with which the industry could meet competition and increase its load.

GAS APPLIANCE CODE

In the absence, because of illness, of E. L. Payne, Pacific Coast member of the Gas Appliance Code Authority, and chairman of the Manufacturers' Section, Pacific Coast Gas Association, the code of the gas appliance industry was explained by W. J. Bailey. Mr. Bailey is president of the Day and Night Water Heater Co. and a member of the Code Administration Committee. Mr. Bailey said that in common with other industries gas appliance manufacturers had shown a tendency to expect too much from their code but that it was his belief that if a sincere effort would be made by the industry a six-months' trial would prove the value of the code. C. A. Swigart, recently appointed as Pacific Coast representative of Gas Appliance Institute, spoke in general terms of the possible effect of the code upon established merchandising practices. Some of these practices will be materially changed, among them being consignment, premium offers, long term credits, advertising for dealers, and other similar policies used in the past to buy dealer business.

NEED FOR BUSINESS DEVELOPMENT

A most impressive talk was made by August J. Bruhn, Los Angeles manager of McCann-Erickson, Inc., on the subject of "What Has the Gas Industry to Say?" Mr. Bruhn stated that the message of the gas industry can be divided roughly into two broad classifications, sales advertising and institutional advertising. When we advertise a specific appliance we are selling merchandise by sales advertising. When we advertise the service our company renders or any phase of it we are selling the company as an institution. A company cannot afford to let its customers misunderstand. It must establish a reputation for good service and good behavior so that when criticism comes the customers will be able to judge whether or not it is justified. Advertising cannot be conducted on an engineering plan. Appealing to the public is not a physical thing. It is emotional.

That the point of view expressed by Mr. Bruhn and other speakers later in the program was thoroughly understood by the highest executives of the industry was proven by the very fundamental statements made by R. W. Miller, executive vice-president of Pacific Lighting Corp., during the course of his talk on the "New Importance of Business Development." He said that from the theoretical time that the first gas company was serving only its first consumer until the present when nearly 100 per cent of the potential consumers have become actual consumers the greatest concern of the utility business has been research, engineering, finance, and organization. This era has come to an end. Construction and research must of course continue, but they will never again have the same relative importance. Growth must now be necessarily slower and the chief concern of the industry is to prevent it from becoming stagnation. Stagnation means decay. Mr. Miller said that the executives of the Pacific Coast utilities had no apprehension on this point, and that he felt that the increasing competition facing the gas business was beneficial both to the companies and to customers. All companies have begun to give new recognition to the importance of their sales and advertising departments, and the gas business can look forward to the approaching era with every confidence.

At the Thursday luncheon meeting the audience of well over 100 received a vivid impression of the problem facing the gas appliance salesman. Donald Fantz, a domestic salesman for Southern Counties Gas Co., told the audience that salesmen must work harder than ever before and that the successful sale depended more upon the approach and the personality of the salesman than upon the construction detail of the appliance.

C. R. Webster, an industrial salesman of the Southern California Gas Co., corroborated Mr. Fantz by saying that this also applied to the industrial field but that in addition the industrial salesman

must be well equipped with facts and figures on cost and performance not only of his own equipment but also the equipment of his competitor.

COMMITTEE ORGANIZATION

The afternoon of March 29 was devoted to separate meetings of the two principal Commercial Section committees and of the Publicity and Advertising Section. Frank Moon of the Los Angeles Gas and Electric Corp. presided at the meeting of the Domestic Sales Committee which spent the entire afternoon discussing several alternative plans for further popularizing domestic gas appliances. Mr. Moon announced that the committee would have eight sub-committees as follows:

Home Service, Jessica Taylor, chairman, Los Angeles Gas and Electric Corp.

Domestic Cooking, J. Earl Jones, chairman, Seattle Gas Co.

Refrigeration, J. E. Kern, chairman, Southern California Gas Co.

Water Heating, A. F. Rice, chairman, H. R. Basford Co.

House Heating, Harold Feyge, chairman, Pittsburg Water Heater Co.

Auxiliary Space Heating, John Redd, chairman, Los Angeles Gas and Electric Corp.

Domestic Laundry Equipment, G. L. Stannard, chairman, Southern California Gas Co.

Air-Conditioning, J. H. Wrenn, chairman, Pacific Gas and Electric Co.

The program of the Industrial Sales Committee was announced by chairman F. H. Woodward of the Pacific Gas and Electric Co. There will be five subcommittees as follows:

Gas Engines, Charles Remschel, Southern Counties Gas Co., chairman.

Hotel and Restaurant Equipment, and Oil Competition, R. J. Phillips, chairman, San Diego Consolidated Gas and Electric Co.

Gas on the Farm, H. E. Davidson, chairman, Southern California Gas Co.

Commercial and Industrial Heating and Off-Peak Water Heating, R. L. Grutzmacher, chairman, Natural Gas Equipment Co.

Training Industrial Gas Salesmen, E. M. DeRemer, chairman, Southern California Gas Co.

Douglas Buckler, chairman of the Publicity and Advertising Section, stated that the advertising men would continue to devote their efforts toward the improvement of advertising copy and that to this end A. C. Joy of the Pacific Gas and Electric Co. would address a questionnaire to all sales executives in an effort to find out just what type of advertising produced the most sales.

SALES DEPEND UPON EMOTIONAL APPEAL

The meetings on Friday, March 30, were devoted to a round table discussion of the plans of these committees and also included two highly inspirational talks. The first of these by A. F. Rice was entitled "More M c.f.'s Per Consumer." Mr. Rice made a plea for original thinking on the part of both executive and salesmen. He said the progress of the gas industry depended not only upon the value of the service which the gas industry can render but also upon the thoroughness with which that service is exploited. Builders and engineers created the gas industry and will continue to improve it but the great need today is for the art of salesmanship. This fact has not thoroughly been impressed upon some of the leaders of the industry. The future progress of the industry will be in proportion to our ability to dramatize gas service in a manner that will stir people to action. Our sales effort and our advertising must contain romance and appeal to the emotions.

The Friday luncheon meeting was deeply stirred by a talk on salesmanship by Victor M. Ekdahl, Los Angeles manager of Swift and Co. Mr. Ekdahl has spent many years with his company and has trained thousands of salesmen in its service. He, too, made a plea for humanity in selling. Successful selling, said Mr. Ekdahl, has only two essential elements. The first is to believe in your product and your company, and the second is to make your contact in the right way.

In closing the final meeting Mr. Buckler, who was presiding at that time, rendered thanks of the group to the Los Angeles Gas and Electric Corp., for its splendid cooperation in providing meeting rooms and to Frank Moon for the excellence of his arrangements.

E. L. Hall Now Operating Manager for Portland Gas & Coke Co.

E. L. Hall

Paul B. McKee, president of the Portland, (Ore.) Gas & Coke Co., has announced the appointment of E. L. Hall, former general superintendent, as operating manager for the company. Mr. Hall has been with the Portland Gas & Coke Co. since 1907, and for years has been prominent in gas industry activities. He served as president of the Pacific Coast Gas Association in 1925 and has also made important contributions to American Gas Association committee work.

Guy W. Faller made Manager Public Service Co. of Colo.

GUY W. FALLER of Denver, Colo., was appointed early in March to succeed the late Clare N. Stannard as vice-president and general manager of the Public Service Company of Colorado, Denver, a Henry L. Doherty & Co. property in the Cities Service Co. group. Mr. Faller has been active in the Doherty organization for 32 years, spending more than 16 years of this period in Denver.

He entered the employ of the Madison (Wis.) Gas & Electric Co. in 1902 as engineer and electrical operator of the steam plant and became superintendent of the plant in 1903. Mr. Faller went to Denver as engineer of gas distribution for the Denver Gas & Electric Co. in 1905 and five years later was named assistant superintendent of the company in charge of the gas and steam heat department. In January of 1913 he was transferred to the superintendency of the City Light and Water Co. and the Amarillo Street Railway Co. of Amarillo, Texas, and two years later was named vice-president and general manager of the company.

Mr. Faller returned to Denver as assistant manager of the Public Service Company of Colorado in 1923 and was also appointed director of the cadet engineering training school. The following year he was named vice-president and director of the utility. In 1930 he was made manager of the Henry L. Doherty & Co. securities department in charge of the Colorado office with headquarters in Denver.

American Chemical Society Holds Eighty-Seventh Convention

The American Chemical Society held its 87th convention at Gainesville, Fla., during the week of March 26-30. Among the papers presented before the Division of Gas and Fuel Chemistry were "Fuel Gas from Sewage and Cellulosic Wastes," by R. E. Hussey, S. B. Row, and W. W. Allison; and "Gases from Cracking Hydrocarbon Oils," by Gustav Egloff and Jacque C. Morrell.

P. G. and E. Employees Have Extensive Educational Program

The Pacific Service Employees Association comprised of employees of the Pacific Gas and Electric Co., is widening its already ambitious educational program for 1934. Two years ago 29 courses were available to members. In 1934 there will be more than 50 courses offered.

Pocatello Grants Public Utilities Consolidated Franchise Extension

The franchise of the Public Utilities Consolidated Corp., Pocatello, Idaho, has been extended by the City Council to July 19, 1961. The former franchise was to have expired in 1936, according to announcement of L. J. Londo, manager for the company.

COMMITTEE:
DOUGLAS BUCKLER...SO. CALIF. GAS CO.
J. EARL JONES.....SEATTLE GAS CO.
A. C. JOY (CHAIRMAN).....P. G. & E.
D. L. SCOTT.....L. A. G. & E. CO.
PIERRE VINET.....C. C. G. & E. CO.

1934 P·C·G·A

HEADQUARTERS:
PACIFIC COAST GAS ASSOCIATION
447 SUTTER STREET, SAN FRANCISCO

GEO. P. EGLESTON, PRESIDENT
CLIFFORD JOHNSTONE, MNG. DIRECTOR

CO-OPERATIVE LOAD-BUILDING MONTHLY NEWS ..... AND VIEWS

MORE ADS. from our 1934 TRADE JOURNAL SERIES

LEFT—Dramatically presenting the part played by gas in the steel industry, this message in "Western Machinery & Steel World" features the Judson plant on San Francisco Bay.

BELOW—Seattle contributes a remarkable example of a "depression-built" business . . . the Clark & Monson restaurant chain, completely gas equipped.

LOWER LEFT—The cleanliness of gas is emphasized in this advertisement for "Western Baker," suggested by the model Los Angeles "Safeway" bakery.

NEW RECORDS IN ECONOMY

GAS-FIRED INGOT HEATING FURNACE *at mill of* JUDSON MANUFACTURING COMPANY, EMERYVILLE, CALIF. *This continuous, counterflow, pusher type, side door pullout furnace is equipped with S. C. 2-stage velocity gas burner*

GAS, the modern fuel, "clicks" with such veteran steel men as N. A. Becker, dynamic head of the recently reopened Judson Manufacturing Company plant on San Francisco Bay.

Rehabilitation of this mill, after several years' idleness, was achieved with record speed and economy by installing high-pressure gas burners (saving the cost of new fuel storage, piping and atomizing facilities and steam-boiler operation.)

"By utilizing the pressure energy of the gas," says Mr. Becker, "we also eliminated air-blowing or compressing equipment, avoiding cost of installation, power and maintenance. And the cleanliness, dependability and easy control of gas-fuel have

For ingot and billet-heating, forging, core-baking, delicate heat-treating processes... practically every known heat requirement . . . gas is unsurpassed in "recoverable" (effective, usable) BTU's* per dollar of cost. Without cost or obligation, avail yourself of the technical counsel of your company's INDUSTRIAL ENGINEER.

*BTU *(British Thermal Unit)*—Standard of heat measurement. Heat required to raise temperature of one pound of water, one degree F.

Quick Clean Economical Gas

CLARK'S COFFEE TAVERN SEATTLE

One of the seven Clark & Monson restaurants which, with central baking plant, have the following gas equipment:

8 gas ranges; waffle irons; steam-table burners; coffee urn burners; griddle plates and hot plates; toasters; broilers; small grills; open burners; glass coffee-maker; proof-box burners; rotary oven and 6-deck bake oven; 3 gas water heaters; one gas heating plant.

A MILLION MEALS prepared with GAS

One million meals in 1933... two million indicated for 1934... this is the record of the Clark & Monson group of Seattle restaurants... all modern, all gas-equipped.

W. F. CLARK—President of Clark & Monson and head of Seattle Restaurant Association.

Starting in 1930 with one restaurant and 12 employees, Walter Clark's "depression-built" business entered 1934 with seven restaurants, a central baking plant and 156 employees! This is what Mr. Clark thinks of the modern fuel, GAS:

"GAS is considerably more convenient, more adaptable to our needs, than any other fuel. The perfection of gas-cooked foods is well shown by their popularity (we are serving 2,500 meals a day). We note especially the desirability of gas as a fuel in our central bakery, where we produce breads and pastries second to none." *(Signed)*—W. F. CLARK, *President.*

From the largest chains to the smallest sandwich shops, leading Pacific Coast restaurants *depend on* quick, clean, economical GAS. Investigate the *exclusive* advantages of the new, modern gas appliances. Without obligating you, your local gas company or dealer will gladly give a demonstration.

Quick Clean Economical Gas the modern fuel

PACIFIC COAST GAS ASSOCIATION, INC.
(A non-profit service organization of which your Gas Company is a member)
447 SUTTER STREET, SAN FRANCISCO, CALIFORNIA

NOTICE HOW CLEAN!

Spotless! No soot, dust, smoke nor grime mars this "Safeway" Bakery... thanks to the modern fuel, gas.

More than 600 Los Angeles retail stores... more than a million customers... depend on the output of "Safeway's" gas-fired ovens, capacity 100,000 loaves a day.

When an organization like "Safeway", with its great resources and skilled technical staff, standardizes on gas, you may be sure the choice is based on known facts and figures.

Smaller bakeries can profit by these same advantages. Just ask your local gas company for the free technical advice of an INDUSTRIAL ENGINEER or specialist in baking installations.

GAS is unsurpassed in "recoverable" (effective, usable) BTU's* per dollar of cost, for practically every known heat requirement.

*BTU *(British Thermal Unit)*—Standard of heat measurement. Heat required to raise the temperature of one lb. of water, one degree F.

Quick Clean Economical Gas the modern industrial fuel

PACIFIC COAST GAS ASSOCIATION, INC.
(A non-profit service organization of which your Gas Company is a member)
447 Sutter Street, San Francisco

BUTANE • PROPANE NEWS

Vol. 4, No. 4 April, 1934

Summary Shows 137 Towns With Piped Gas Service

AT the end of 1933, liquefield petroleum gas was being delivered through mains to consumers in 137 communities in 28 states by 56 companies, according to a summary made last month by the Statistical Department of the American Gas Association.

Butane-air gas with heating value ranging from 520 to 600 B.t.u. per cubic foot was supplied to 91 communities in 26 states by 48 companies. A mixture of undiluted butane and propane gas with a heating value of 2,800 to 3,000 B.t.u. per cu. ft. was supplied to 12 communities in California and Nevada by 5 companies.

Undiluted propane gas, with a heating value of 2,550 B.t.u. per cubic foot was supplied to 34 communities in Minnesota, North Dakota and Wisconsin by three companies. These latter three companies distribute gas in some communities through mains from a central plant and in others use an "alley tank" system, delivering to a number of consumers on the same block from a central reservoir.

At the end of 1933, three communities in Canada were also supplied with butane-air gas. One community, Three Rivers, Quebec, was supplied from a plant located in that city, while Milltown and St. Stephen, New Brunswick were being supplied by the Citizens Gas Company from its plant in Calais, Maine.

Important Changes Made in Philgas Co. Personnel

A NUMBER of important personnel changes have been announced in the ranks of the Philgas organization. Paul Endacott, vice-president and assistant general manager of the company, has gone to the Phillips Petroleum Co., of which the Philgas Co. is a subsidiary, as director of sales research. Changes in the Philgas staff necessitated by Mr. Endacott's transfer include the following:

A. B. Cameron, formerly eastern sales supervisor, becomes sales manager with headquarters at the Detroit central office; W. D. Cook, formerly western operations supervisor, takes the new position of operations manager, at Detroit; F. F. Campbell, formerly western sales supervisor, will become eastern sales supervisor located in Detroit; Earl Rodgers, recently made district manager at South Sudbury, becomes western sales supervisor, with headquarters in Detroit; Frank M. Andrews, formerly district manager at Pontiac, Mich., will become western operations supervisor, headquartering in Detroit; G. R. Benz, formerly assistant manager of the Industrial Division, has been made assistant to the general manager, and is in direct charge of the engineering, technical and service departments; G. L. Brennan is assistant manger of the Industrial Division; O. M. Setrum, formerly manager of the Gas Manufacturing Division and chief technician of Philgas Co., recently accepted a position with the Phillips Petroleum Co. Refining Department at Bartlesville; Wayne Friend, formerly District Manager of South Sudbury, Mass., Philgas district, has been made chief technician of Philgas Co., succeeding Mr. Setrum, and is now on the Detroit office general staff.

Southern Liquid Gas Co. Seeks to Widen Operations

Alabama Public Service Commission has before it a petition from Southern Liquid Gas Co. for authority to serve iso-butane gas in certain sections of the state. Action on the petition is awaiting an opinion requested of the attorney general as to whether the company may be classed as a public utility and subject to the commission's jurisdiction. The company, which is now rendering service at Dothan, Ala., has requested permission to conduct business in Barbour, Bullock, Coffee, Covington, Crenshaw, Dale, Geneva, Henry, Houston, and Montgomery counties, including both urban and rural territory.

Southeastern Service Opens New Butane Cold Storage Unit

L. W. Thurlow, manager, Southeastern Service Corp., Indio, Calif., announced the opening in March of the new plant of the Indio Cold Storage Co., a subsidiary of Southeastern Service Corp. The new storage plant is refrigerated by butane-propane, supplemented by a gas engine driven modern ammonia refrigeration plant. The engine will also utilize butane-propane. A description of the company's cold storage enterprise appeared in *Western Gas* for March, 1934.

Truck Refrigerating Unit on Market in Six Months

McCord Radiator and Manufacturing Co., Detroit, Mich., recently licensed to manufacture a propane refrigerating unit for installation on refrigerator trucks, expects to put the unit on the market in about six months. Shell Oil Co. of Calif. initiated experiments with the automotive refrigerating system, which utilizes propane as motor fuel as well as the refrigerating medium, more than two years ago. The project was subsequently taken over by Shell Development Co., which recently turned manufacturing rights to McCord Radiator and Manufacturing Co.

West Coast Meetings on Code Application

TWO meetings called by the Emergency National Committee of the Liquefied Gas Industry were held on the Pacific Coast in March, the first one being at the Biltmore Hotel in Los Angeles on March 27, and the second in San Francisco at the Palace Hotel on March 30. W. G. Oliver, Standard Oil Co. of Calif., a member of the Code Authority of the Liquefied Gas Industry, and also a member of the Executive Committee of the Code Authority, presided at both meetings.

Discussion of the industry's Code of Fair Competition was the purpose of the session. The liquefied gas code covers all marketing of liquefied gas for any use in any quantities and in all sizes and types of containers.

At the Los Angeles meeting a local advisory committee for the Southern California division was named, consisting of the following:

W. G. Oliver, Standard Oil Co. of California, chairman.

A. N. Kerr, Imperial Gas Co.

Charles E. McCartney, Petrolane Co., Long Beach.

C. B. McGlachan, Shell Oil Co.

F. O. Olmstead, Union Oil Company of California, Los Angeles.

N. H. Seneca, Bottled Gas Corp., San Diego.

H. N. Wade, Parkhill-Wade Co., Los Angeles.

A similar committee was appointed for Northern California at the San Francisco meeting, made up of those named below:

W. G. Oliver, Standard Oil Co. of California, chairman.

R. A. Hansen, Livermore.

Herman Irwin, Irwin and Smith, Brookdale.

I. H. Kruttschnitt, Jr., Butane Sales Co., San Francisco.

W. E. Lehe, Sacramento.

California Safety Orders Now Available

CALIFORNIA Industrial Accident Commission on March 12 made effective its "Liquefied Petroleum Gas Safety Orders," covering the storage, handling and utilization of these gases. Development of these orders was initiated by the industry through the California Oil and Gas Association late in 1933. A draft of a proposed safety order developed through Association committees was submitted to the Industrial Accident Commission in November.

Copies of the safety order, which came from the press March 30, are available at the Industrial Accident Commission's Los Angeles and San Francisco offices. Copies will be mailed on request at the following prices: Single copies 15 cents; five copies 60 cents; 10 copies 95 cents; over 10 copies 7 cents each.

New Mexico Dry Ice Plant To Be Built Near Estancia

The Witt Ice & Gas Co., Albuquerque, New Mex., contemplates erecting a plant four miles north of Estancia, to manufacture dry ice. The pipe line will be laid by the Estancia Valley Carbon Dioxide Development Co. from its gas wells on the Wilcox Dome in north central Torrence County, New Mex., to the dry ice plant. The gas is reported to be 97 per cent pure carbon dioxide. H. M. Wood is president and manager of the Estancia Valley Carbon Dioxide Development Co., Inc., headquartering in Albuquerque.

Frank Y. Locke, Bottled Gas Pioneer, Dies

Frank Y. Locke, president of Northwestern Blaugas Co., St. Paul, Minn., died on February 16, and his passing took from the industry one of the pioneers in bottled gas operations in the United States. Northwestern Blaugas Co. was organized by Mr. Locke in 1910 to distribute "Blaugas," a mixture of cracked oil gases; in later years the company has marketed propane.

Bulletin on Engine Use

The industrial gas division of Philgas Co., Detroit, Mich., announces publication of its Bulletin No. 38 entitled "A New and Better Fuel for Internal Combustion Engines," describing service of liquefied petroleum gases in this field.

Chicago Standby Installation

Peoples Gas Light and Coke Co., Chicago, Ill., has added butane standby equipment for emergency use in peak loads. Storage for a half million gallons of butane is maintained.

THE OVERWHELMING FAVORITE

There must be a reason why Hackney Liquefied Petroleum Gas Cylinders outnumber all others in service *combined* by two to one.

There must be a reason why such blue ribbon firms as: Shell, Standard, Phillips, Hope, Skelly—choose Hackney cylinders.

There is a reason. It is the efficient design and faultless workmanship of Hackney cylinders. Hackney has built them ever since Butane, Propane and Butane-Propane mixtures were first developed.

PRESSED STEEL TANK COMPANY

208 S. LaSalle St. Bldg. Room 1185 CHICAGO, ILL.
6633 Greenfield Ave. MILWAUKEE, WIS.
Hackney MILWAUKEE
1363 Vanderbilt Concourse Bldg. NEW YORK, N. Y.
666 Roosevelt Bldg. LOS ANGELES, CALIF.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

Soil Corrosion Conference Scheduled for May 10

ANOTHER of the series of valuable soil corrosion conferences which have been held on the Pacific Coast in recent years is being arranged for May 10, under the chairmanship of W. M. Henderson, superintendent of distribution, Los Angeles Gas and Electric Corp. The session will open at 1:30 P.M., in the auditorium of the Los Angeles Gas and Electric Corp., 810 South Flower Street, Los Angeles.

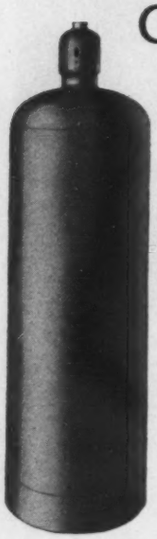
K. H. Logan, chief of the Underground Corrosion Section, U. S. Bureau of Standards, and Dr. Gordon Scott, research associate, American Petroleum Institute, will both be present at the session. The tentative program arranged under Mr. Henderson's direction includes the following papers:

"Specifications for a Modern System of Bituminous Pipe Line Inspection," (Illustrated), by Dr. U. B. Bray and F. S. Scott, Research Department, Union Oil Co.

"A Study of Pitting Data on Bare Steel Pipe in Southern California Soils," by H. V. Buffington and O. L. Wrestler, Los Angeles Gas and Electric Corp.

"Second Report on the Corrosive Effect of Horizontal Soil Strata," by Iro D. Van Giesen, Electrolysis Engineer, Los Angeles Department of Water & Power.

SCAIFE
CYLINDERS



FOR LIQUEFIED PETROLEUM GASES

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MANUFACTURED IN ACCORDANCE TO I. C. C. SPECIFICATIONS

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CAPACITIES TO MEET CUSTOMERS REQUIREMENTS

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Founded 1802

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WM. B. SCAIFE & SONS CO.
OAKMONT, PENNA.
PITTSBURGH
CHICAGO

BUTANE
Fuel of the Future

BUTANE is an efficient, economical substitute for manufactured gas, natural gas, and electricity for domestic and industrial uses, including heat-treating, cutting, welding, refrigerating. The perfect fuel for rail motor cars, busses, trucks, stationary engines.

Investigate By Requesting Engineering Data and Complete Details

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SALES
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55 New Montgomery
San Francisco
SUtter 5678

973 North Main
Los Angeles
CApital 12108

Illinois Utilities Protesting State Sales Tax

A number of public service companies, furnishing gas, electric and water service in the State of Illinois, have filed in the State Circuit Court actions to enjoin the Director of Finance from collecting the tax imposed by the Retailers Occupational Tax Act "upon persons engaged in the business of selling tangible personal property at retail in this State at the rate of 2% of the gross receipts of such sales made in the course of business." Late in August, 1933, the companies bringing these actions were informed by the Department of Finance that this tax was considered collectible from public utility companies.

On September 19, 1933, in the case of The Peoples Gas Light and Coke Co., a temporary injunction was issued by the Circuit Court of Cook County and on September 20 the company filed an injunction bond in the sum of $50,000.

A demurrer to this injunction was filed on October 2, 1933, by an attorney general for the State of Illinois. Decision upon this demurrer is still before the court.

The companies contend that the act does not apply to public utility service because the furnishing of such service does not constitute within the meaning of the act, engaging in the business of (a) selling any property, or (b) selling any property at retail, or (c) selling tangible personal property; the companies take the position that they are in the business of furnishing service.

W. J. Young, Vice-President Oklahoma Natural Gas Co.

W. J. Young

W. Jennings Young, former general sales manager of the Oklahoma Natural Gas Co., Tulsa, Okla., has been named vice-president of the company. Mr. Young will succeed B. F. Pickard who has resigned, and will be in charge of operations for the company. Mr. Young has been with the Oklahoma Natural Gas Co. and the old Oklahoma Natural Gas Corp. since 1921. In 1931 he was made assistant to R. W. Hendee who was appointed president of the company last month.

Charles J. O'Donnell of U. G. I. Passes

Charles J. O'Donnell, sales engineer of The U. G. I. Contracting Co., division of United Engineers & Constructors Inc., Philadelphia, Pa., died suddenly on March 20 at Philadelphia, the result of a heart attack. Mr. O'Donnell was associated with The United Gas Improvement Co. and affiliated companies for 35 years, coming to the organization in 1899. During his service in the industry he worked on the staffs of the Philadelphia (Pa.) Gas Works Co., Minneapolis (Minn.) Gas Light Co., The U. G. I. Co. at Philadelphia, the Peoples Gas Light Co. of Manchester, N. H.

From 1911 to 1917 Mr. O'Donnell was assistant in the department of test and research of the United Engineers & Constructors, Inc., and from 1930 to the time of his death he was sales engineer of The U. G. I. Contracting Co.

A.G.A. May Abolish Publicity and Advertising Section

The executive board of the American Gas Association has approved a number of amendments to the A. G. A. Constitution the effect of which is to abolish the Publicity and Advertising Section of the Association, and to provide membership on the executive board for the chairman of the Publicity and Advertising Committee, which will become a general committee. The board has placed this action before the membership for ratification.

Seattle Occupation Tax Ruled Valid; Rate Cut Appealed

ON March 19 the United States Supreme Court ruled that the 3 per cent city occupation tax levied by Seattle on the Seattle Gas Co. is valid. This decision follows closely upon the heels of the February 15 order from the Washington Department of Public Works, which fixed a rate base for the Seattle Gas Co. of $8,075,000 and a fair rate of return of 6.75 per cent on that figure. This order found the company's revenue excessive to the degree of about 3 per cent and ordered domestic rate reductions which will result in lessened annual revenues of approximately $50,000. In the same order the Washington Department of Public Works stated the principle that the 3 per cent city occupational tax on gross revenues was a proper operating charge and should be added to the company's rate schedule. The Department's ruling will be reviewed in the Superior Court of Thurston County, which has issued a supersedeas order permitting the company to continue its old rate schedule plus the 3 per cent tax, the excess to be impounded for refund to customers in case the rate reduction order is sustained.

U. S. Pipe and Foundry Co. Opens Washington, D. C. and Boston Offices

The United States Pipe and Foundry Co., Burlington, N. J., has announced the opening of Washington, D. C., offices in the Earle Building. The branch will be in charge of S. E. Linderman, Washington representative for the company.

Offices are also being opened in the Consolidated Gas Building, Boston, Mass., in charge of Carl N. Brown, formerly sales agent for the United States Pipe and Foundry Co. in Kansas City, Mo. R. C. Lemert, formerly in the sales office at Birmingham, Ala., is succeeding Mr. Brown in Kansas City.

Casper, Wyo., Dismisses Suit Against New York Oil

Announcement was made in March that the city of Casper, Wyo., has dismissed its suit against the New York Oil Co. and decided to drop its negotiations to purchase the company's gas plant and properties serving Casper. The Lakota Oil and Gas Co., which with the city of Casper entered into a contract to purchase gas, is endeavoring to enforce its contract with the city and it is anticipated that legality of the contract will be tested in the courts some time in the near future.

Augusta, Ky., City Council Petitions for Natural

The Augusta, Ky., city council on March 12 approved proposed service of natural gas in Augusta, and will offer a gas franchise for sale. Petitions are now being circulated to the citizens of Augusta to determine how many desire gas. The Bracken County Gas Co., Forster, Ky., a subsidiary of the Columbia Gas and Electric Corp., New York, N. Y., which supplies Cold Springs and Forster, Ky., has a franchise in the county, and is expected to extend services to Augusta.

1934 Calendar

April

Annual Distribution Conference American Gas Association—Book-Cadillac Hotel, Detroit, Mich., April 9-10.

Mid-West Gas Association—Hotel Warrior, Sioux City, Iowa, April 16-18.

Missouri Association of Public Utilities—Annual Convention, The Elms Hotel, Excelsior Springs, Mo., April 19-20.

Southwestern Gas Measurement Short Course—University of Oklahoma, Norman, Okla., April 24-26.

May

Natural Gasoline Association of America—Tulsa, Okla., May 9-11.

Soil Corrosion Conference—Los Angeles, Calif., May 10.

International Petroleum Exposition—Tulsa, Okla., May 12-19.

Joint Conference of Production and Chemical Committees, American Gas Association—Hotel New Yorker, New York, N. Y., May 21-22.

June

Canadian Gas Association—27th Annual Convention, Windsor Hotel, Montreal, Canada, June 4-5.

Northwest Regional Conference, Pacific Coast Gas Association—Portland, Ore., June 21-22.

September

Pacific Coast Gas Association—41st Annual Convention, Hotel Del Monte, Del Monte, Calif., September 11-13.

October

American Gas Association—16th Annual Convention, Atlantic City, N. J., Week of October 29.

California Commission Suggests Compromise in P. G. and E. Case

California Railroad Commission on March 26 asked for proposals from the Pacific Gas and Electric Co. for a compromise in the Commission's recent order calling for a $2,100,000 reduction in natural gas rates. Such proposal if made would be heard by the Commission at San Francisco on April 10. The P. G. and E. case has been appealed to the Federal courts where it is in the hands of a master awaiting further hearings beginning April 16.

R. H. Luscombe Goes to Penn Electric Switch Co.

The Penn Electric Switch Co., Des Moines, Iowa, manufacturers of refrigeration, industrial and heating controls, announce the appointment of R. H. Luscombe to its sales staff. Mr. Luscombe has been identified with the industrial and space heating fields of the gas industry for a number of years.

Announcement of a new line of thermostats and automatic gas valves will come from the company soon.

Joplin Gas Co. Participates In 10th Annual Cooking School

The 10th annual cooking school conducted at Joplin, Mo., by the Joplin Globe and this year under the direction of Frank Decatur White, noted home economics expert, was held early in February, with approximately 3,000 in attendance. Detroit Jewel ranges, of both senior and junior table top types were furnished by The Joplin Gas Co. for the demonstration.

Ralph G. Caulley Joins Republic Steel Corp.

N. J. Clarke, vice-president in charge of sales for the Republic Steel Corp., Youngstown, Ohio, has announced the addition of Ralph G. Caulley to the district sales office of the company at Detroit, Mich. Mr. Caulley has been connected with the Wheeling Steel Corp. for 14 years, the last seven of which were spent in the Detroit district.

Line Extension to Supplement Winfield Supply

The Home Natural Gas Co., Winfield, Kan., announces completion of 4 miles of pipe line extension from Hackney to Geuda Springs, Kan., being constructed to supplement the gas supply to Winfield. The extension is a 6-inch line and parallels the present 8-inch line.

Special Water Heater Campaign

From February 15 to March 15 New Orleans (La.) Public Service Inc. conducted a special campaign on water heaters in cooperation with appliance dealers. The feature of the campaign was a low down payment of 34 cents.

Write for descriptive circular

KEROTEST MFG. CO.
PITTSBURGH, PA.

KEROTEST

Sold . . . 12,000 Ranges

(Continued from Page 13)

range, gas can and will be used for cooking when the housewife is shopping, or at a theater or bridge party; when the family is out driving on Sunday afternoons or holidays and under numerous other circumstances. In fact, the extended use of clock-controlled gas ranges may conceivably do much to regain the load the industry has lost through the modern trends toward increased use of automobiles and of canned foods, by permitting the use of both the automobile and the range at the same time to a degree not otherwise possible, and by eliminating the necessity of hastily preparing meals after having been away from home for several hours or more.

As a result of this promotion, the clock-controlled gas range has been firmly established in Southern California, the campaign having brought about an acceptance in two months which in the normal course of events would have taken years, as was the case with the oven heat regulator; and as time goes on, the superiority of this type of range to the dealer in sales appeal, to the user in convenience, and to the utility in ability to meet competition and to build load will become more and more apparent.

Ruud Mfg. Co. Bulletin

The Ruud Manufacturing Co., of Pittsburgh, Pa., has published Sales Bulletin No. 130 describing a new line of all-steel, non-breakable tank water heaters.

MEASUREMENT and CONTROL

Remote Control of Valves at Compressor Plants

By C. S. Pool

General Superintendent
Industrial Fuel Supply Company
Los Angeles, California

DURING recent years conditions do not seem to have warranted much expansion of the natural gas industry, and because of this fact little mention has been made of the several operating conveniences incorporated in some existing compressor plants, or of some that probably should be provided for in the design of proposed new plants. One operating convenience and safety appliance stands out in the mind of the writer as of major importance, and that is the remote control of all plant intake and discharge line valves, fuel gas shut-off valves and plant piping blow-down valves. There are several sources of power for the operation of remotely controlled valves, among which are electricity, gas under pressure, water and compressed air. The latter or compressed air method is the only one with which the writer has had actual contact, having felt more assured of dependable operation because of the fact that in the design and construction of practically all modern compressor plants a separate tank of compressed air is maintained for emergency uses.

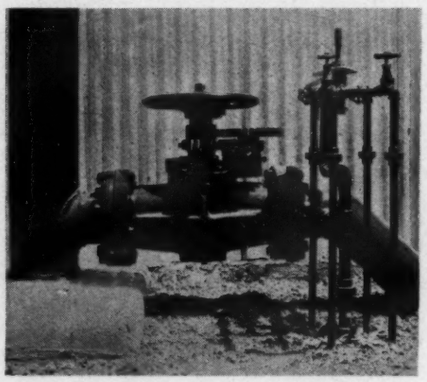
C. S. Pool

Several years ago, in 1922, the writer was in charge of operations at the then largest gas compressor plant upon the Pacific Coast. This plant was seriously damaged by fire and explosion subsequent to a break in a line carrying gas at 425 pounds pressure. Had it been possible to close quickly all key valves from some one point of control, injury to persons and property probably could have been reduced in extent, if not avoided. Because of this experience a decision was made to provide remote control of all key valves when designing additional compressor plants.

Since the instance mentioned above the writer has assisted in the design of two compressor plants, one of which is composed of ten 760 h.p. direct connected gas engine driven compressor units operating with an intake pressure of 20 pounds and a discharge pressure of 420 pounds; the other one being composed of ten 175 h.p. direct connected gas engine driven compressor units operating with an intake pressure of 250 pounds and a discharge pressure of 400 pounds—a booster station.

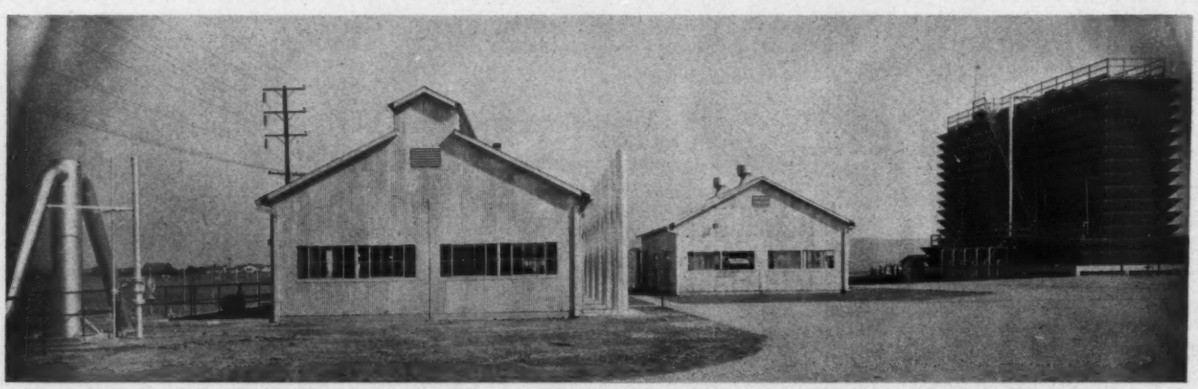
Emergency Control at Ventura

In the larger of the two plants, which is located near Ventura, Calif., there are four separate intake lines, three low pressure ones and one high pressure, which operates under a pressure of 250-300 pounds. In each low pressure line is installed a butterfly valve operated by an air-actuated piston, and in the high pressure line is installed an emergency stop-valve of the swing-check type which is closed by a falling weight released by an air actuated diaphram. In two fuel gas lines are installed falling weight operated balanced valve type stop-valves, the weight being released by air actuated diaphrams. Air supply lines to all valves lead from a central control point located away from the danger zone. Compressed air for operating all valves is supplied through one common valve so that all will operate simultaneously. At this control point is located the plant blow-down valve which is installed in a large line leading to this point and which connects to the plant discharge line just ahead of a non-return valve which prevents gas blowing back into the plant in case of a ruptured line. The blow-down valve is of the lubricated plug type and is hand operated.



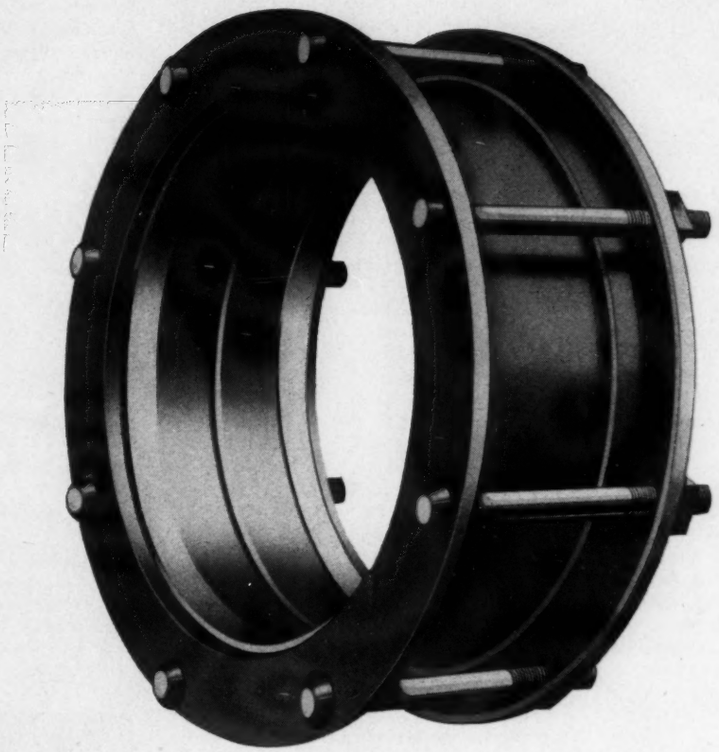
Central control point at Ventura compressor plant. Small lines supply air to the several stop valves. Large plug valve is blow-down valve for plant piping.

Method of Operation: In case an emergency arises, an operator opens the stop-valves' air supply line, which closes off all intake lines and stops the compressors, opens the blow-down valve which releases all gas in the plant, the non-return valve in discharge line having closed upon cessation of flow. Tests have shown the plant to be free of gas in 1½ minutes. *(Turn to Page 32)*



Exterior of Somis booster plant. Plant piping blow-down and fuel blow-down motor-operated valves are seen at the left beside scrubber.

DAYTON
ALL STEEL COUPLINGS



In over thirty years of service to the gas industry, Dayton Couplings have proven themselves for convenience and rapidity in pipe line construction and repair, for dependability and efficiency in service and for economy in both installation and upkeep.

The use of Dayton Couplings on lines of either natural or manufactured gas is an assurance that joints will be strong and flexible, permanently tight and leak-proof, regardless of service conditions. There is a style and size for every pipe line need.

THE NATIONAL-SUPERIOR COMPANY
DAYTON PIPE COUPLING DIVISION
DAYTON, OHIO

In the smaller of the two plants, located near Somis, Calif., the operation is more simple because the plant is a booster. Emergency stop-valves of swingcheck type—falling weight operated, the weight being released by an air actuated diaphram—are installed in the intake and discharge lines. Air motor operated lubricated plug-valves are provided for plant by-passing and for the plant blow-down. A fuel line blow-down valve is linked to the plant blow-down valve so that the one motor operates both valves. Air supply lines supplying air for operation of all valves radiate from two control points; one in the compressor room for normal use in by-passing the plant and one in the auxiliary building for emergency use.

Method of Operation: In case an emergency arises an operator opens the common air supply valve which supplies air to the motors operating the by-pass valve, the plant and fuel blow-down valves and to the diaphrams for releasing the weights on the emergency stop-valves. Tests have shown the plant to be free of gas in less than 1 minute.

At both the plants a separate air storage tank is maintained under full pressure at all times for use primarily in connection with the operation of emergency stop equipment.

Although in recent years A.S.M.E. safety codes have become more and more conservative, there still remains danger of equipment failure and the writer feels that extreme care should be exercised in the design of compressor plants and that equipment similar to that described herein should be provided as an aid in the protection of life and property.

Measurement Course to Offer Complete Program

FOR the first time in two years the Southwestern Gas Measurement Short Course will convene again at the University of Oklahoma, Norman. Dates are April 24 to 26, inclusive.

As in previous years, representatives of measurement and control equipment manufacturers will contribute a group of talks on specific apparatus including domestic meters, large capacity positive meters, high and low pressure regulators, orifice meters, gravity balances, etc.

A wide assortment of papers is scheduled from measurement executives in operating companies. These discussions will go into such problems as determination of line losses, calculation of meter charts and coefficients, well capacities, field testing meters, practical meter and regulator stations, operating and installing recording temperature gauges.

From the College of Engineering staff of the University of Oklahoma will also come a number of lectures, on elementary gas laws, operation of calorimeters, operation of slide rule and gas rule, etc.

Also on the program are several features more general in nature. W. R. McLaughlin, Arkansas Natural Gas Corp., as chairman of the Meter School Committee, will preside at the opening general assembly Tuesday morning, April 24, at which time messages will be heard from E. F. McKay, manager of Oklahoma Utilities Association; Dr. William B. Bizzell, president, University of Oklahoma; Ray E. Miller, secretary, Natural Gasoline Association of America; A. E. Higgins, secretary, Natural Gas Department, A.G.A.; and W. P. Z. German, general attorney, Skelly Oil Co.

Later general sessions will include addresses from R. W. Hendee, president of Oklahoma Natural Gas Co., and J. H. Felgar, dean of the College of Engineering, University of Oklahoma. A paper by R. S. J. Pickett, chairman of Fluid Meters Committee, A.S.M.E., will be presented by D. A. Sillers of the Lone Star Gas Co. J. J. Hassler, gas and electric engineer, Oklahoma Corporation Commission, will also give a paper.

Numerous other papers are scheduled, and a number of the Short Course features will be reviewed in succeeding issues of *Western Gas*.

D. C. Williams, president of the Ponca City (Okla.) Distributing Co., is chairman of the Short Course Program Committee.

S.C.M.A. Considering Standard Gas Sample Proposal

HOLDING its monthly meeting for the first time at the Rosslyn Hotel, Los Angeles, Southern California Meter Association conducted an interesting program on the evening of March 22.

C. A. Lymann, director of advertising, of the Securities First National Bank, gave a very interesting talk on current economics with particular reference to a proposal for restoring the balances between urban and rural populations by returning city dwellers to the farms. His explanation of the subsistence farm idea as contrasted to the present industrialized large scale farm was received with interest by everyone present.

Following this general program feature Guy Corfield, chemist of the Los Angeles Gas and Electric Corp., gave a paper on "A Standard Gas Sample for Checking Specific Gravity Balances." The proposal for adoption of the standard gas sample was referred to the Association's Standards Committee for further study and recommendation. T. K. M. Smith, chairman of the Standards Committee, directed a general discussion on the subject of Mr. Corfield's paper.

On behalf of the California Natural Gasoline Association Frank Burt invited members of the S. C. M. A. to the C. N. G. A. Spring Frolic, to be held April 14 at the Los Serranos Country Club, Chino. A general sports program to occupy the entire day is planned.

Gordon Greene announced the S. C. M. A. monthly golf tournament for Lakewood Golf Course, March 31.

George A. Lane, Measurement Authority, Passes

GEORGE A. LANE, retired superintendent of The Peoples Gas Light and Coke Co. meter repair shop, passed away February 11, at the age of 65 years. He had been with the Chicago utility 46 years, beginning his activity in the gas industry at the age of 18 as a meter reader with the Hyde Park Gas Co., and serving successively as bill deliverer, service helper, and later meter repairman. In 1922 he was made superintendent of the company's West Meter Shop, and in 1925 took full charge of the meter repair division, the position he held at the time of his retirement in July, 1933.

George A. Lane

Mr. Lane contributed much of consequence to the meter repair division of the gas industry. Several patents covering meter designs have been issued to him, and he was widely known in the middle west as an authority on gas meters, having lectured before middle west universities and technical schools. The Peoples Gas Light and Coke Co.'s meter shop in which he developed and put into practice a "task system" is generally considered a model meter shop. Mr. Lane was also the author of many papers for industry publication.

Southern Gas Association Elects for Coming Year

APPROXIMATELY 300 delegates attended the joint sessions of Southern Gas Association and the Southern-Southwestern Regional Gas Sales Conference, at Memphis, Tenn., March 21 to 23, including leading executives of numerous companies.

W. W. Winter

Elections of officers and directors for the Southern Gas Association were held at the meeting, as follows:

W. W. Winter, Atlanta, Ga., president.

C. B. Gamble, Birmingham, Ala., first vice-president.

H. E. Meade, New Orleans, second vice-president.

S. L. Drum, New Orleans, La., secretary-treasurer.

Directors: L. H. Hungate, Jr., Memphis, Tenn.; Edgar Morris, Washington, D.C.; C. L. Ridley, Nashville, Tenn.; W. S. Russell, Atlanta, Ga.; E. S. Dickey, Baltimore, Md.; R. F. Fledderman, Hamilton, Ohio; D. H. Levan, Jacksonville, Fla.; J. V. Strange, Houston, Texas.

Coralville Franchise Granted

The Iowa City (Iowa) Light and Power Co. has been granted a 25-year gas franchise by the city council of Coralville, Iowa.

HERE'S ONE SURE WAY GAS COMPANIES CAN *Save Money!*

Standardize on NATIONAL Scale Free Pipe for service lines! This will eliminate frequent interruptions on account of repairs and replacements, due to clogged orifices, or to pitting. The clean, smooth surfaces of this pipe have no scale to break off and start these troubles because the NATIONAL Scale Free Process (applied to butt-weld sizes ½ to 3-inch) eliminates the scale. This process was developed by National Tube Company and has made NATIONAL the outstanding pipe value for gas service. Read the 5 outstanding advantages listed to the left; they sum up the reasons why this pipe gives assurance of longer life, better service, and greater economy. For your next requirements be economical—play safe at the start—insist on NATIONAL—*The Original Scale Free Pipe.*

ADVANTAGES

1. Minimized corrosion—particularly pitting. 2. Better base for galvanizing or other protective coatings. 3. Full delivery capacity—less friction loss. 4. No damage to valve seats; no clogging of small orifices. 5. Greater strength at the weld —due to the extra rolling in the process.

All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth glistening surface or metallic lustre which is characteristic of good galvanizing.

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Subsidiary of United States Steel Corporation

NATIONAL SCALE FREE PIPE
SPELLERIZED

Anti-Minimum Bill Law in Oklahoma

OKLAHOMA'S Anti-Minimum Bill law and its relation to promotional rates in the gas industry was discussed before the 16th Annual Convention of the Oklahoma Utilities Association at the Tulsa meeting on March 7, by B. P. Stockwell, rate and valuation engineer of Oklahoma City. The author is utility representative for the Southern Division, Reporting Statistical Corp.

Under Oklahoma statute No. 11,620, better known to the gas industry as Oklahoma's Anti-Minimum Bill law, only straight commodity rates or block commodity rates are permitted, service charges or adequate minimum bills being prohibited. Mr. Stockwell, on the basis of studies conducted among Oklahoma companies, pointed out that these prevailing types of rates failed to properly distribute the cost of service over all bills and among all consumers. The result is that approximately two-thirds of Oklahoma gas customers are served at less than cost, the deficit being absorbed by excessive bills upon the remaining one-third. Needless to say, the condition represents a great impediment to business development, as well as being unfair to certain classes of customers.

Particular reference in Mr. Stockwell's remarks was had to the Collinsville case, an action brought by the Natural Gas Utilities Co. for an adjustment of gas rates in Collinsville, Okla. The action is against the general statute and hence is of vital interest to all Oklahoma gas utilities. In it the gas company applied to the Corporation Commission of Oklahoma for any rate change which would produce adequate revenue, its prevailing commodity rate of 48 cents per M c. f. failing to return sufficient revenue even to meet operating expenses.

The company suggested a number of rate forms, incorporating minimum bills, service charges, or high initial commodity rates. All proposals were denied by the Commission, the first two as being illegal under the existing statute, and the latter as being in the commission's opinion an evasion of the same law. Decided issue is taken to this interpretation, particularly inasmuch as the commission has authorized this type of rate many times in the past, some 84 Oklahoma communities receiving gas under rates with high initial steps. The effect of the commission's action is to deny Oklahoma companies the right to make promotional gas rates, and to make it impossible to spread charges in keeping with service costs. The Collinsville case is now being prepared for appeal to the higher courts.

It was also pointed out by Mr. Stockwell that the Anti-Minimum Bill law makes difficult the development of rates which spread the annual gas bill over all months of the year. The gas customer now pays 60 per cent of his annual bill in the three winter months. However, the greatest injustice involved in the law's operation falls upon the relatively small proportion of larger users who make up the deficit created by non-remunerative small users. Evidence in the Collinsville case shows that 30 to 40 per cent of the customers of some 35 Oklahoma and Texas gas companies using straight commodity rates fail to pay operating expenses, and that 60 to 70 per cent of all bills under such rates fail to pay the cost of the service.

These inequalities are inevitable under the straight commodity rate, even though the revenues returned are adequate to earn operating expenses and fixed charges.

Speedy repeal of the Anti-Minimum Bill law is vital to the future of gas sales in Oklahoma, and would seem to be called for in all fairness, since the State of Oklahoma now allows use of some form of adequate minimum bill, service charge or demand charge to municipally operated gas properties, as well as to all electric properties, water properties, telephone utilities, and many other types of public service.

Discussing possible rate procedure under the limits of the present law, Mr. Stockwell gave examples of promotional type rates containing high initial charges. He also gave attention to "room rates," which a number of utilities have begun to use in recent years. A typical room rate submitted called for a fixed charge of 30 cents per room, (not less than four or more than eight rooms) plus the following:

First 1 M c.f. per room per consumer per month	$0.50
Next 1 M c. f. per room per consumer per month	.40
Excess	$0.20 per M c. f.

This type of rate of course would not be allowed under present law.

Strongly urging the design of promotional type rates, Mr. Stockwell recommended all utilities to conduct comprehensive surveys to determine market possibilities which such rates would reach. From a study conducted by himself on a natural gas property of 16,000 customers he found the following conditions:

Homes without water heaters	5,639
Water heaters using oil, coal, or electricity	72
Electric ranges	489
Ranges using oil and gasoline	1,024
Coal and wood ranges	114
Coal, oil, gasoline, coke, and electric heaters	1,316
Houses and business places piped—not using gas	1,540
Houses and business places not piped for gas	1,385

The proper type of rate structure, designed with reference to the promotional needs of the individual utility, will do much to reach such markets as the above. Market and rate studies should be conducted well in advance of contemplated changes to make certain that new rates will fit the local situation. Close knowledge of classes of customers and reliable data on present and potential appliances is essential.

Pending the correction of the Oklahoma law, promotional rates of the high initial charge form can be used and can be designed so as to closely approach the cost of service, thus distributing costs between classes of customers and smoothing out the seasonal curves in the companies' revenues.

If difficulty is experienced in getting promotional rates of the high initial charge type approved by the Oklahoma Commission, Mr. Stockwell stated that such rates may be adopted as optional, and that such procedure will be permitted by the commission, thus providing the means of attracting considerable new business as well as selling gas to better customers on a more equitable basis.

Johns-Manville Offers Booklet on Insulation Data

"Insulation in the Gas and Coke Industries" is the title given a new 72-page book just published by Johns-Manville of New York City. The volume describes insulation methods for water and oil gas sets, coal gas retort benches, boilers, piping, and auxiliary power plant equipment. Tables of recommendations covering proper material, together with detailed specifications and drawings on methods of application are included in the contents. Copies may be had upon request to Johns-Manville, 22 East 40th Street, New York, N. Y.

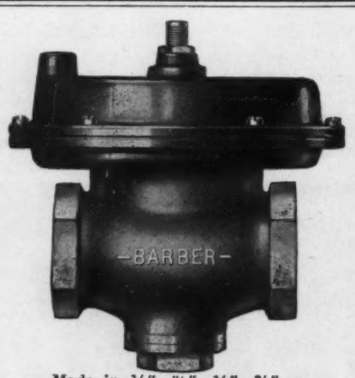
United Public Service Begins Jefferson Island, La., Extension

The United Public Service Co., headquartering in Houston, Texas, has begun construction of a 10-mile natural gas pipe line from the company's main line south of New Iberia, La., to Jefferson Island, to supply the sulphur mine of the Jefferson Lake Oil Co. Oran T. Donaldson is local manager of United Public Service at New Iberia.

SAVE

on gas bills!

That's what everyone of your customers is trying to do—get gas bills down as low as possible. With a BARBER Gas Pressure Regulator on any gas appliance, gas bills will be much lower. Show one to your customers, take the orders and the profit. Write for details.



Made in ¼", ⅜", ½", ¾", 1", 1¼", 1½", and 2" sizes

The Barber Gas Burner Co.

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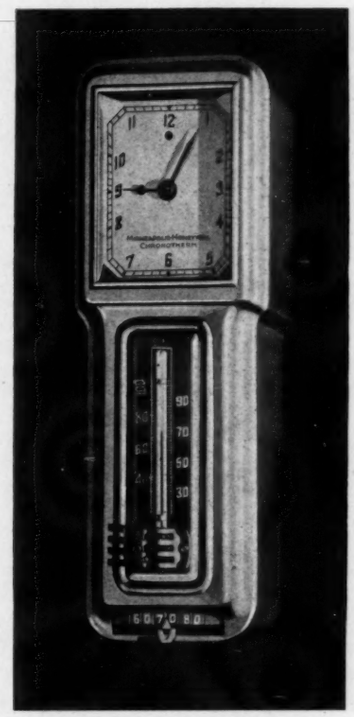
CLEVELAND . . . . . OHIO

A BIRD IN HAND



CHRONOTHERM*
Formerly called Thermochron

A SATISFIED customer is like the proverbial bird in the hand. He's worth far more than the much sought prospect (the bird in the bush). He's your best salesman, while a dissatisfied customer is a distinct liability. You can keep your gas heating customers completely satisfied by recommending and installing the Chronotherm (formerly called Thermochron) . . . The Chronotherm not only provides absolutely unvarying temperature at all times, and entirely eliminates Cold 70° without use of a low limit control, but actually reduces fuel costs while doing so. Your customers will stay satisfied and they'll tell others when their gas heating equipment is Chronotherm controlled . . . . Minneapolis-Honeywell Regulator Company, 401 East 28th Street, Minneapolis, Minn. Branch or distributing offices in all principal cities.

■

MINNEAPOLIS · HONEYWELL

Control Systems

Water Heater Drive on P. G. and E. Lines

AN automatic water heater campaign planned for Pacific Gas and Electric Co. territory during the months of March, April and May, has numerous interesting features. Styled "The United Industry Water Heater Campaign", the promotional plan joins manufacturers, jobbers, distributors and retailers into common effort with utility sales forces, and throws special gas company support in the form of advertising and other sales helps behind the work during the campaign period.

Campaign terms will include minimum payment of $5 down, with $5 monthly payments, and trade-in allowances will be of standard amounts.

The P. G. and E. will carry special water heater advertising in virtually all daily and weekly newspapers during the three campaign months, plus billboard copy on automatic gas water heaters in almost all towns. Company truck cards and window trims throughout the territory will be devoted to automatic gas water heaters during April and May. Floor displays will be conducted in nearly all of the company offices.

P. G. and E. direct sale of automatics will be directed at existing buildings where occupants are either using competitive fuel water heating equipment or manually controlled types of gas water heaters. Leads developed for automatic gas water heaters to replace old automatics will be turned over to cooperating water heater dealers.

Special Metropolitan Advertising

In San Francisco, Oakland, Berkeley and Alameda the P. G. and E. is setting up a special fund to encourage special advertising of automatic gas water heaters during the campaign. The company will pay to dealers and others from this fund one-half the cost of their advertising space. Provisions governing this cooperative advertising offer, and the procedure for its administration, include the following:

1. The advertising must deal exclusively with automatic gas water heaters.
2. No prices shall be quoted and in lieu of price terms may be quoted.
3. The terms advertised must not be less than $5 down and $5 a month.
4. The water heaters advertised must be trade names that are A.G.A. approved and listed in the latest approved list of the American Gas Association.
5. The advertising must be approved by the P. G. and E. prior to running.
6. The advertising may be run in certain specified newspaper to secure P. G. and E. participation in cost.
7. The program is limited to the special fund which the company has set aside, which is: San Francisco $5,000, and East Bay $2,000.
8. Each advertiser will be limited to a maximum of $1,200 in advertising space approved prior to May 1, that is $600 his cost, and $600 company cost. The rule of first come first served will apply up to this amount.
9. Any money left in the special fund on May 1 and thereafter until May 25 will be available without limitation and approvals will be made in order of receipt of copy.
10. Advertising shall be of different column width from that carried by P. G. and E. over its own signature if it is placed at the top or the bottom of said P. G. and E. advertisement and adjacent thereto.
11. Lay-out and copy or finished proof of each advertisement must be submitted to the P. G. and E. publicity department for approval prior to insertion, together with information on size of the ad, papers in which it will appear, and cost of space in each paper.
12. To be reimbursed for one-half the space cost the advertiser pays for his advertisement and then submits personal bill to P. G. and E., attaching to it receipted bill from the newspaper, along with tearsheet showing the advertisement with name and date of paper, and the P. G. and E. officially okayed proof.

John O. Wiley to Represent Paramount Manufacturing Co.

Robert E. Poethig, chief engineer of the McAlear Manufacturing Co., Chicago, Ill., announces the appointment of John O. Wiley as representative of the Paramount Manufacturing Co. of San Francisco, Calif., in southern California territory. The Paramount Manufacturing Co. has recently taken on distribution of the products of the McAlear Manufacturing Co., manufacturers of pressure regulators, back pressure valves, pressure and level controls, and power plant equipment.

John O. Wiley

Mr. Wiley is a member of the Pacific Coast Gas Association, and has been affiliated with the gas industry for the past 10 years. He was a former co-manager of Westcott & Greis, Inc., in the Los Angeles office. His appointment to the new post comes as a result of Mr. Poethig's recent trip to the Pacific Coast.

United Gas System Holds Safety and Sales Session

The United Gas System, Houston, Texas, held a combined safety and sales promotion meeting on March 8 in the Randolph Hotel, Henderson, Texas, with an attendance of 158 executives and employees of the system. Representatives of the company attended from Jacksonville, Nacodoches, Marshall, Longview, Mineola, Palestine, Dallas and Houston, Texas.

PAPICO ODORIZERS

—insure constant, dependable odorization of natural gas

Accurately inject the correct amount of odorant. Fully automatic. Lowest in cost.

Our new Bulletin 05 gives full details. Ask for it.

HARRY F. HALDEMAN, Inc.
411 West Fifth St. (Engineered Products) Los Angeles, Calif.

SATISFIED CUSTOMERS

■ Keep your customers satisfied by recommending and installing the Chronotherm*... the greatest achievement in the field of automatic heating. It provides unvarying temperatures and will entirely eliminate "Cold 70°", and save fuel by doing so. Minneapolis-Honeywell Regulator Co., 401 East 28th Street, Minneapolis, Minn.

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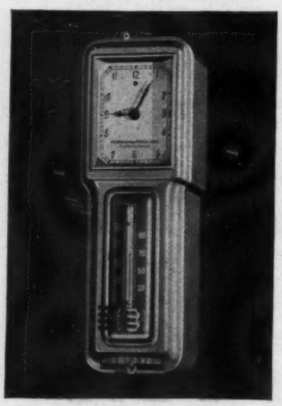
MINNEAPOLIS-HONEYWELL
Control Systems



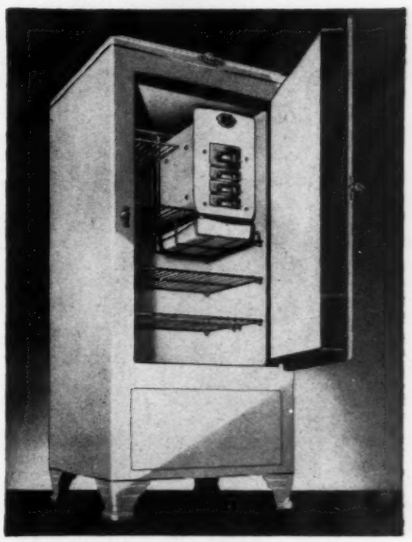
The Chronotherm*... Provides absolute unvarying temperatures and eliminates "Cold 70°".
* *Formerly called Thermochron.*

Are you on

THE BANDWAGON

FOR THE BIGGEST YEAR IN GAS REFRIGERATION HISTORY?

If not, the time to act is now!



NINE profitable months remain in 1934 for gas companies that get behind Electrolux *at once!*

Already, leading utilities from coast to coast have swung into action with the new Electrolux. In Philadelphia and other large cities, they're holding rallies. Giving their employees the story first-hand on the 1934 Electrolux. Getting the new models in prominent display on the floor and in the windows. Organizing a concerted drive for gas refrigeration sales.

60% Load Increase!

For remember: Electrolux boosts the annual household load 60%! Years of promotional effort pushed the average annual consumption of gas to 28,000 cu. ft. Now — *overnight* — Electrolux jumps this load to 45,000 cu. ft.

And that's not all! Every Electrolux installed builds important good-will for gas as the modern fuel . . . goes a long way toward insuring another automatic all-gas kitchen . . . protects your $250 meter investment.

The beautiful new Electrolux models embody all those worthwhile modern conveniences every woman wants . . . attractive features that mean *easier* sales with Electrolux in 1934!

Start Planning, at Once!

So don't delay! Plan now for definite merchandising and sales activity on Electrolux this year. Your local efforts will be supported by the biggest advertising campaign ever run on gas refrigeration!

USES NO WATER

For full details and help in mapping out your program, write, wire or phone Electrolux Refrigerator Sales, Inc., Evansville, Ind.

NEW *Air-Cooled* ELECTROLUX

THE SERVEL *Gas* REFRIGERATOR

PAYNE

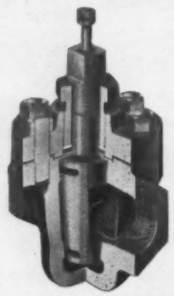
SERIES "CB" FURNACES

The solution to your industrial heating problems. Twelve more industrial installations added to our long list within the last two months.

Write for information and prices

Payne Furnace & Supply Co.
Since 1914
Beverly Hills, Calif.

NORDSTROM
Lubricated
PLUG VALVES



Cut-away view of Nordstrom Lubricated Plug Valve. Made in sizes from ½" to 30", in various metals. Also made with face-to-face dimensions same as gate valves, 2" to 12" permitting installation without altering pipe dimensions.

MERCO NORDSTROM VALVE CO.
A Subsidiary of
PITTSBURGH EQUITABLE METER CO.
Main Offices: Pittsburgh, Penna.
Branch Offices, Warehouses in Principal Cities

Resistance of Pilot Orifices to Dust Stoppage

(Continued from Page 15)

the cock, but unless this cock has been machined with micrometer accuracy they will be relatively unequal and the effective opening, for orifice purposes, will be at one end of the barrel only. This may be either the upstream or downstream end and therefore gas flow arrows have been pointed in both directions through the opening. It has been stated that such an orifice is, if anything, worse than a needle constricted opening. This is, at first glance, difficult to understand, for the opening is considerably larger than the maximum dust particle and not so very dissimilar to the circular orifice. However, it will be observed that the dust has to make a sudden change in direction and pass around and between two sharp and probably rough and irregular edges which are, in addition, smeared and probably festooned with grease or other lubricant.

It is difficult to visualize the behavior of two pilot cocks, or needle valve and pilot cock, in series, and explain why this combination plugs easier than either alone. Perhaps it is because the velocity through each orifice is reduced, and this allows the dust to build up faster, even though each orifice is actually larger.

Drawing D indicates the maximum and minimum size of dust particles that are drawn to orifices passing 0.5 cu. ft. per hr. These sizes were determined by actual microscopic measurement of dust samples taken from orifices. It is readily seen how a circular orifice, with its diameter so much larger than that of the dust, and providing a straight-line path for the particles, is very difficult, if not impossible, to plug.

New and Unusual Orifices

Two new types of orifice have recently appeared on the market. While not specifically developed to resist dust stoppages, they seem to have possibilities.

One is of the needle valve type, except that it is built to pass the gas vertically upward and the needle is attached to, and part of, a movable internal piston-like device that is held in suspension by the moving gas and thus holds the needle in the orifice. It was designed to give constant volume gas flow regardless of pressure; for instance, if the pressure increases, flow will be momentarily greater, causing the needle to rise and cut the flow down, the net result being a dynamic equilibrium giving the same flow as formerly. It was thought that such a device would automatically free itself of dust, provided the dust did not prevent movement of the internal "piston" by getting between it and the housing wall.

One of these orifices, designed to pass 1.5 cu. ft. per hr. at 7 inches water, was tested on the dust machine, and showed but slight tendency to plug. We have not yet obtained one passing 0.5 cu. ft., but hope to do so, as the principle appears to have some promise.

Another type is based on the principle that restriction of gas flow to pilot volume can be obtained by passing the gas through a relatively long length of capillary or small diameter tubing—which diameter, however, is considerably larger than that of the corresponding conventional orifice. For instance, with a pressure of 7 inches water, a pilot volume of 0.5 cu. ft. per hr. can be obtained by passing the gas through approximately 10 feet of tubing of 1 millimeter (1/25 of an inch) diameter.

An ingenious adaption of this principle has recently been placed on the market as an asserted means of eliminating stoppage of manufactured gas pilots by gum particles. The gas is caused to pass in a spiral manner along grooves cut in the face of a metal disc—the groove corresponding to the small diameter tube. Any number of discs can be arranged side by side, giving the equivalent of any necessary length of groove, in very compact form. One of these devices, adjusted to give 0.5 cu. ft. per hr. gas flow, became plugged on the dust machine in 4 days. Apparently the dust had accumulated at one or more of the sharp turns used to give passage from one disc to the next.

This general principle will be investigated further, but it seems that it will be difficult to adapt, because the dust will not traverse sharp curves or bends, and several feet of relatively straight tubing would be difficult to manage.

Conclusions

The general conclusions from this series of tests and observations are:

1. The design of conventional needle valve and pilot cock pilot controls is very unfortunate when a dusty gas is being handled.
2. The circular orifice is so far superior as to merit serious consideration, for installation in dusty areas, even though it permits of no adjustment within itself.
3. The general requirements of a non-dust plugging orifice are:
   (a) Smallest periphery possible (perfect circle the best).
   (b) Absence of sharp, ragged or lubricated edges or surfaces.
   (c) Free passage of gas without impact or sharp change in direction.
   (d) Opportunity for dust to fall out, to be drawn away, or otherwise dispersed after passing through orifice.
4. Non-conventional flow reduction devices, such as the "floating needle valve", and "long friction tube", show some promise as dust resisting pilot controls.
5. Dust particles that can be carried to a small pilot are so small that they should readily pass through a properly designed orifice.

Knox Lee Elected Director Southwestern Gas and Electric

Knox Lee, of Marshall, Texas, manager of the Texas divisions of the Southwestern Gas and Electric Co., and president of the Southwestern Public Service Association, was elected to the directorate of the company early in March. Mr. Lee has been engaged in the utility field for 25 years, and went to Marshall from Dallas as engineer for the company about 1923. In 1926 he was named manager of the Marshall district. He was formerly connected with Stone and Webster Engineering Corp. at Beaumont, Texas, and with the Fort Worth municipal gas system.

Our fifty favorite dealers

PURE nonsense . . . of course it is. Naturally we have no favorites. But you might think we had if you knew that fifty dealers made more money last year as a result of money we spent. How did they do it?

They synchronized their advertising with ours. They published more than 500 tie-in advertisements in their local, home town newspapers. They invested in 5166 column inches of newspaper space—the equivalent of 32 full eight column pages. And they backed it up with direct mail, window and floor displays and, in several cases, methodical house-to-house canvassing. Did it pay?

In 1933 there were only 5% more tie-in advertisers than in the previous year, but *the volume of tie-in advertising was 31% higher.* Every year, in fact, since the Dealer Bulletin was first published, tie-in participation has gone steadily up.

• • •

Our point is this: A few dealers are tying in with P. G. and E. promotional advertising and are getting results or, obviously, they would not increase the number and size of their tie-ins year by year. But the fact remains that only a fraction of the appliance-demand being created by our sales promotion is being converted into *sales.* Records show that at least 1200 dealers are able profitably to tie in, yet 94% of the tie-in advertisements are traceable to only fifty dealers. Our 1933 business building program in which we invested more than a quarter of a million dollars was a valuable sales stimulant to these fifty dealers . . . *because they made themselves a part of it.* But to hundreds and hundreds of others it was just so much water over the dam.

A new year is beginning and with it a new series of cooperative drives. Four campaigns will be sponsored by this company, three by the Gas Appliance Society and six by the Electric Appliance Society. Each of these offers opportunity for cooperation among progressive fellow merchants. Each, regardless of its sponsorship, will be whole-heartedly supported by us. The more dealers participate, the better it will be for everyone. If you are not one of them already, the fifty "regulars" will welcome you to their ranks.

•

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PACIFIC GAS AND ELECTRIC COMPANY

Owned · Operated · Managed by Californians

Can be set to blow at any desired pressure

SET the Fulton Lever Safety Valve at any pressure you desire, between 10 and 100 pounds, and when that pressure is reached the valve blows. Never sticks. Never fails. For low pressure distribution, it is advisable to have a safety valve between the high pressure and the low pressure regulators. For pressures between 5 and 100 pounds, the lever type here shown—for pressures below 5 pounds, a C-F Deadweight Safety Valve is recommended. Fulton Safety Valves, regulators, and other C-F equipment for gas control are of superior design and workmanship. They have been used with satisfaction for 40 years. Full information on request.

The Chaplin-Fulton Manufacturing Company
28-40 Penn Avenue **Pittsburgh, Pa.**

Representatives: WESTCOTT & GREIS, Inc., Sales and Service, Dallas, Tulsa; JNO. W. CRAWFORD, Sales Engineer, 1855 Industrial Street, Los Angeles; PARSONS ENGINEERING CO., Los Angeles, Calif., San Francisco, Calif.
OR ANY JOBBER

Fulton Lever Safety Valve

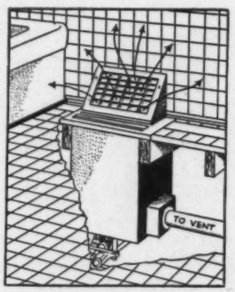
WARD WALL-HE-TOR

Economical gas heat for the bathroom

Now for the first time in gas history, a vented appliance, ornamental, and taking up little space, is available for bathrooms. This has been made possible by the Ward Wall-He-Tor, which will heat the average bathroom for as little as half-a-cent an hour, depending upon local gas rates.

Wall-He-Tors are ideal for dens, breakfast rooms, and small bedrooms. They may also be used as unit systems for houses without basements.

Write for literature, terms, and prices. Ask about Ward Floor Furnaces with Bilt-In Thermo-Control.



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Semet-Solvay Engineering Corporation
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Gas Wastage in the Texas Panhandle

(Continued from Page 11)

were held by the Commission, at which grants were issued to anyone who appeared and requested a permit to produce dry gas for stripping purposes.

The present casinghead facilities include 55 plants with a capacity of 1,850,000,000 cubic feet. It has been reported that several new plants will be built during the year, as well as enlargements on several existing plants. At the present rate of increase, it is estimated that the total capacity of all casinghead plants in the Panhandle will be 2¼ to 2½ billion cubic feet by the end of 1934.

Due to the abandonment of conservation measures, the casinghead plants immediately increased their withdrawals. The plant capacities increased 21 per cent during the year, or from 1,420 million to 1,850 million. The withdrawals increased from 281,245,-155,000 to 337,717,066,000 cubic feet. The quantity of natural gasoline recovered in 1933, exclusive of the plants of pipe lines, was only 1/10 of 1 per cent over the previous year, there being 209,065,920 gallons in 1932 and 209,383,146 in 1933. (See Fig. 1.)

At the present rate of withdrawals of gas from the field, the remaining reserves, with no increase in consumption, will suffice for 16 years. If the stimulus provided by the governmental measures are effective, a production of double the present volume may be expected; under which conditions, the remaining reserve of 12,100,000,000,000 cubic feet will be exhausted in 10 years or less.

Effect of Sour Gas Law on Gas Field: The Panhandle field is primarily a gas field. Of the 1,350,000 acres in the field, about 1,000,000 acres produce only dry sweet gas, and 350,000 acres produce sour gas. The oil fields, occupying at present about 150,000 acres, occur partly in the sweet gas area and partly in the sour gas area.

The production of oil has been attended by an enormous wastage of gas. It is estimated that in the early days when the development for oil was rapid, more than a billion cubic feet per day was blown into the air from drilling wells. After casinghead plants were constructed it is said that casing was ripped or lifted to allow the production of gas with the oil. The gas processed by casinghead plants was not measured, so no accurate records are available prior to 1932, but the volumes given in the table above have been estimated and are thought conservative.

The total utilized gas production from the field to date, whether pipe line or casinghead, is approximately 3 trillion cubic feet. Of this amount, one-sixth has been transported through pipe lines and five-sixths to casinghead plants. These withdrawals have been unequally distributed over the field. The pipe lines have withdrawn their gas from about 1,000,000 acres and the casinghead plants from 150,000 acres. This gives a per acre withdrawal of 16,000,000 cubic

feet to casinghead plants and 523,000 to pipe lines.

Gas migrates from high rock pressure areas to areas of low rock pressure. The original rock pressure in the field was 430 pounds. In the areas where the greatest amount of gas has been blown to the air the rock pressure is now below 200 pounds. The accompanying rock pressure map shows this condition and gives a picture of the drainage taking place. (See Fig. 3.)

The Railroad Commission was helping to enforce conservation in 1932, but due to the sour gas law conservation was abandoned and in 1933 and 1934 an increase in the quantity of gas blown to the air occurred. Fig. 2 shows by daily averages the distribution of gas production and the amount of gas blown to air daily during 1932, 1933, and the month of January, 1934.

The remarkable increase of gas blown to air daily during January, 1934, will be noted. Probabilities are that under the sour gas law this wastage of gas will increase. The daily average production of gas by gas pipe lines has also increased, but this is not truly comparative with yearly averages because the month of January is one of the peak load months for the gas pipe line companies. Probabilities are that the average daily consumption by gas pipe line companies for the year 1934 will not be much greater than that in 1933, because their takes decrease greatly during the summer months.

Effect on Oil Production: It is believed the wasteful withdrawals from the field will have a serious effect on the oil pools. As the gas in contact with the oil is diminished in pressure, a migration of oil into sands now occupied by gas will occur from expansion of the dissolved gases in the oil. This movement will destroy the reservoir energy remaining in the oil pools. It is estimated by petroleum engineers that only 25 to 35 per cent of the oil in a pool is recovered by normal production practices. With the rapid withdrawal of gas occurring in this field, it will be impossible to obtain even the normal recovery of oil. If this rapid production of gas is permitted to continue, it is not unlikely that the oil reserves still remaining in the field will be reduced to a small fraction of the possible recovery.

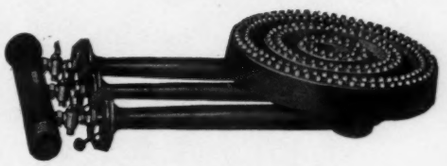
Natural Gas Service Co. to Serve Arizona Rural Consumers

The Natural Gas Service Co., affiliate of the Western Gas Co. which recently completed the new Tucson-Phoenix extension, has been granted a certificate of convenience and necessity to sell gas to cities and towns along the new line outside of the areas supplied by public utility companies in Cochise, Pima, Pinal and Maricopa counties, Arizona. C. C. Cragin is vice-president and general manager of The Natural Gas Service Co.

Two-Year Expansion Program For Cedar Falls Distribution System

The city council of Cedar Falls, Iowa, has approved a two-year program of expansion of the municipal gas distribution system, to involve an estimated cost of $13,000. The plan has been divided into six projects, four of which are expected to be completed in 1934.

Johnson No. 60 BCE Ring Burner For Every Purpose



The average shop will find dozens of uses for this triple ring burner. Each ring burner operates independently. They may be used separately or in any combination. The largest burner of this highly efficient combination ring burner is 15 inches in diameter.

Johnson No. 18 Automatic Hand Torch

Johnson Automatic Hand Torches are balanced for easy handling. Burners are equipped with pilot light and hose connection. Push-button valve is conveniently located on top of torch and operated by thumb. Write for details.

JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

Pacific Coast Representative—C. B. BABCOCK CO.
135 Bluxome St., San Francisco, Calif.

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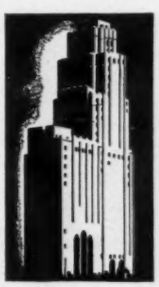
REFRACTORIES

Refractories for conversion burners, space heaters, and circulating heaters. Made to exacting standards of quality—standards which are maintained by modern production methods, careful workmanship, and accurately controlled burning. Our engineers will gladly cooperate on new designs, alterations, production economies, etc.

General Ceramics Company, 71 West 35th Street, New York



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This directory gives the personnel of gas utility district offices as well as headquarter companies, arranged by states and including distributing companies, pipe line companies, producing companies and holding companies. Each distributing company lists the kind of gas served—pressure—B.t.u. content—number of meters and indicates whether or not each company merchandises.

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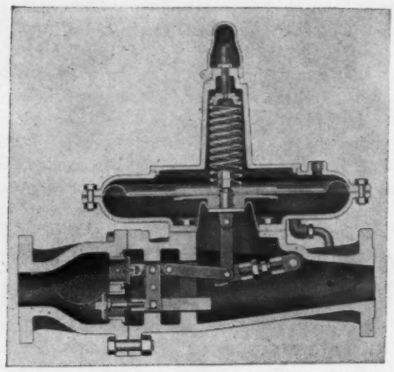
Reynolds Announces New Toggle Type Regulator

Reynolds Gas Regulator Co., Anderson, Ind., announces incorporation of several new features in the Reynolds double balanced valve toggle type regulator. In previous models with the valve orifices in a horizontal plane the gas made right angle turns in passing the orifice. By building the regulator with the balanced valve orifices in a vertical plane the gas now flows in a straight line through a streamlined channel, which greatly increases the capacity. The valves travel, from the face of the orifice, in direct proportion to the travel of the diaphragm,



making the regulator very sensitive and giving accurate pressure control on both small and large volumes.

Other features noted in this latest model of the Reynolds Company are: Removable housing containing orifices, which can be taken out of the line without the removal of the regulator; the construction of this housing is such that different size orifices can be installed in it; there are hand hole plugs on the side to permit the removal of the valves to renew seats; the valves are so arranged that by adjusting one of the valves, both seat simultaneously, allowing the regulator to be serviced without being removed from the line.

The new product is manufactured for reducing pounds to pounds, or pounds to inches, in either spring or dead weight type, with or without pilot control, and is waterproofed for outside or underground installation.

Lone Star Gasoline Co. Plans to Erect Plants in Panhandle

Lone Star Gasoline Co., Dallas, Texas, has under consideration the construction of from three to six large plants in the Texas Panhandle, to extract gasoline from natural gas. Wheeler and Gray Counties have been tentatively surveyed for sites and plans are already under preparation for the plants. A cost of $200,000 each is estimated.

Economics Division, B. of M., Moves

The address of the Pacific Coast office of the Petroleum Economics Division of the U. S. Bureau of Mines has been changed to 526 Custom House, San Francisco, Calif.

Chaplin-Fulton Issues New Steam Specialties Catalog

The Vigilant feed-water regulator and other steam specialties made by The Chaplin-Fulton Manufacturing Co., Pittsburgh, Pa., are represented in a 60-page illustrated catalog offered for distribution. In this particular field, besides the Vigilant feed-water regulator, the line comprises the Fulton boiler-feed pump governor, differential and constant-pressure types, Fulton gas-fuel boiler governor, Fulton altitude governor, Fulton vacuum pump governor, single diaphragm and duplex types, Fulton water reducing valve, Fulton steam reducing valve, constant pressure pump governor, Bingham gauge cock, and Fulton ejector.

The Chaplin-Fulton Co. is also manufacturer of an extensive line of equipment for pressure control in the use and distribution of gas.

Columbian Gasoline Corp. Completing 19-Mile Line

The Columbian Gasoline Corp., Monroe, La., reports construction of a 16-inch, 19.4-mile pipe line to bring natural gas from the Wheeler County, Texas, fields to the company's gasoline plant in Gray County. Seventeen miles of the line will be of Naylor toncan iron spiral welded pipe. It was necessary to make two river crossings, the total length of which is approximately 5100 feet, on the line route which was accomplished by supporting the pipe on a trestle type piling 40 feet apart. The line is to be completed by April 15, according to W. E. Reardon, superintendent of Columbian Gasoline Corp., a subsidiary of the Columbian Carbon Co.

Gas Field Controversy on Ratable Taking of Gas Settled

The controversy between the Magnolia Petroleum Co. and the Consolidated Gas Utilities Co., Consolidated Gas Service Co., and Central States Power & Light Corp., alleging violation of the Oklahoma Corporation Commission's order requiring ratable taking of gas, has been settled by a recent commission order. The basis for the order is an agreement by the Consolidated Gas Utilities Co. and the Consolidated Gas Service Co. to take gas from two wells and the Central States Power & Light Corp. from four wells involved in the case.

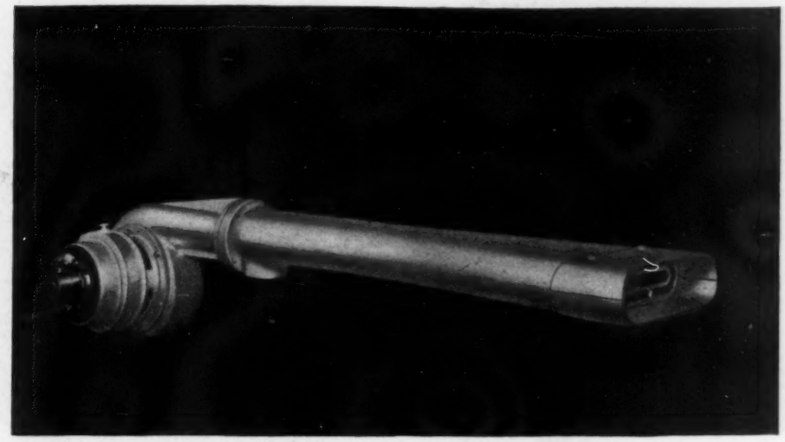
Nebraska Court Sanctions Use of Natural Gas by Omaha Packers

Use of natural gas by Omaha packing plants was approved March 3 by the Nebraska supreme court in an opinion upholding the ruling in February of District Judge Dineen, who refused to enjoin operation of the Northern Gas and Pipe Co.'s line to the plants. The pipe line has been in constant use and the decision will not affect operations.

Leroy M. Edwards on Directorate

Leroy M. Edwards, general counsel for the Los Angeles Gas and Electric Corp., has been elected to the directorate of the company. He replaces August Schilling of San Francisco.

In N. G. E. TYPE GA BURNERS



N.G.E. Gas Burners

N.G.E. Liquid Level Controllers

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Developed by competent engineers thoroughly conversant with bake oven design and operation, the Type GA is easy and safe to light and operate,—uniform in heat distribution,—affords perfect combustion,—has a large reserve burner capacity,—reduces fuel costs,—has uniform quality of production,—is clean and safe,—simple to adjust,—has a dial gas valve which permits exact settings,—all of these features effect economies in production costs. Maximum capacity N.G.E. Type GA Gas Burner 7500 cu. ft. of air per hour.

BURNER CAPACITIES

Calorific Value of Gas	*Capacity in Cu. Ft. Per Hr.*
2500 B.t.u. per cubic foot.....	300 cubic feet
1180 B.t.u. per cubic foot.....	700 cubic feet
850 B.t.u. per cubic foot.....	900 cubic feet
550 B.t.u. per cubic foot.....	1400 cubic feet

NATURAL GAS EQUIPMENT INC.

Petroleum Securities Bldg., Los Angeles — 1123 Harrison Street, San Francisco — *Arizona Distributors:* Crane Co.

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The Goodman Stopper

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

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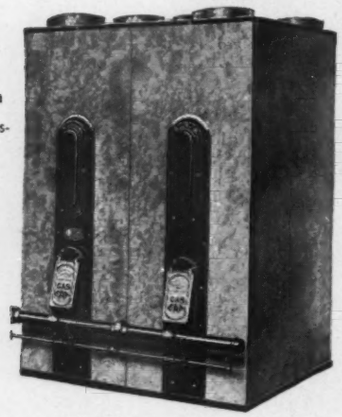
We make a complete line of gas-fired boilers, pressed steel and cast furnaces.



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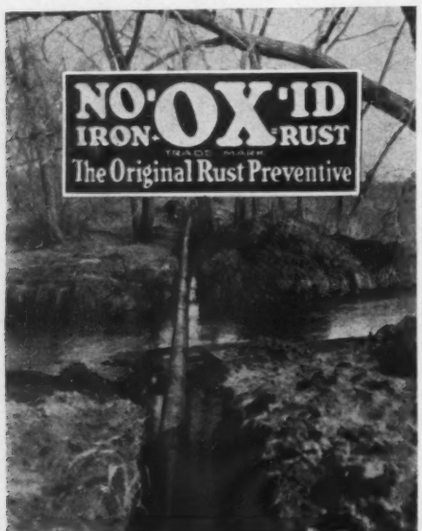

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Mid-West Gas Association Convening April 16-18

ROBERT L. KLAR, president of the Mid-West Gas Association, has announced Hotel Warrior, Sioux City, Iowa, as convention headquarters for the 29th annual meeting of the Association, to be held April 16, 17 and 18. Included in the program for the sessions are the following:

R. L. Klar

Opening Remarks: Robert L. Klar, president, Mid-West Gas Association.

The Gas Industry: Alexander Forward, managing director, American Gas Association.

Kitchen Planning: Dorothy McGeehan, International Nickel Co., Chicago, Ill.

Faith, Hope and Charity: G. A. Neal, vice-president and general manager, Iowa Public Service Co., Sioux City, Iowa.

New Home Possibilities: H. J. Carson, Northern Gas and Pipe Line Co., Omaha, Neb.

Advantages of Natural Gas to the Local Gas Company: R. W. Hendee, Oklahoma Natural Gas Co., Tulsa, Okla.

Three-Point Public Relations Advertising: Stanley Taber, Iowa-Nebraska Light and Power Co., Lincoln, Neb.

Utility Advertising: R. D. McCord, McCord Advertising Agency, Minneapolis, Minn.

Experiences in Cracking and Mixing Various Gases: J. A. Perry, United Gas Improvement Co., Philadelphia, Pa.

Servicing House Heating Equipment: F. J. Gunther, assistant general manager in charge of operations, Iowa-Nebraska Light and Power Co., Lincoln, Neb.

Load Building Possibilities of Air Conditioning: L. C. Harvey, Bryant Heater and Manufacturing Co., Cleveland, Ohio.

Rental Sales Plans—

Water Heaters: Bernard T. Franck, American Light and Traction Co., Chicago, Ill.

Heating Equipment: C. A. Nash, United Light & Power Engineering & Construction Co., Davenport, Iowa.

Ranges: Vernon Myers, Iowa Public Service Co., Sioux City, Iowa.

Selling Hot Water Heating the Year Around: H. V. Armstrong, manager, Electric & Gas Utilities Co., Terre Haute, Ind.

Modern Improvements in Customers' Appliances: R. B. Harper, vice-president, Peoples Gas Light & Coke Co., Chicago, Ill.

Water Heating Sales Thru Upstairs Control: Tom Grant, American Gas Products Corp., Chicago, Ill.

How to Learn How to Sell: Vernon Myers, Iowa Public Service Co., Sioux City, Iowa.

Room Temperature Control: N. B. Delavan, Penn Electric Switch Co., Des Moines, Iowa.

In addition the following Mid-West Gas Association A.G.A. representatives will bring reports to the convention: C. A. Nash, United Light & Power Engineering & Construction Co., Davenport, Iowa, advertising representative; L. O. Rasmussen, Union Light, Heat and Power Co., Fargo, N. Dak., industrial representative; P. A. Stover, Central States Electric Co., Cedar Rapids, Iowa, technical representative; A. W. Schmitt, Des Moines (Iowa) Gas Co., accounting representative; Stanley Taber, Iowa-Nebraska Light and Power Co., Lincoln, Neb., commercial representative.

The Association's annual convention banquet will be held in the ballroom of the Hotel Warrior, the evening of April 17.

Officers Named for Oklahoma Utilities Association

OKLAHOMA Utilities Association's 15th annual convention at Tulsa March 6-7, was one of the most important meetings in the organization's history, drawing an attendance of 525. At the executive board meeting on March 7 H. B. Cobban of Miami, general manager of the Northeast Oklahoma Railroad Co., was elected president for the new year, representing the electric railway division. W. B. Head, Jr., Sand Springs, president of the Oklahoma Power and Water Co., was elected first vice-president, representing the electric division; C. A. Breitung, of Ada, state manager of the Southwest Gas Utilities Corp., was elected second vice-president, representing the gas division. W. R. Emerson of Oklahoma City, vice-president of the Oklahoma Gas and Electric Co., and E. F. McKay, Oklahoma City, were re-elected treasurer and manager, respectively.

C. A. Breitung
Vice-pres. representing Gas Division

Semet-Solvay Engineering Corp. Announces Gas Plant Improvements

A number of improvements are under way at western gas plants, according to Semet-Solvay Engineering Corp. of New York, which has just completed the erection of three oil gas purifier shells for the Laclede Gas Light Co., St. Louis, Mo. Another improvement under way is that by the Wisconsin Southern Gas Co., Burlington, Wis., which is replacing an installation of checkerbrick. A water gas machine recently installed at the Calumet (Mich.) Gas and Coke Co. plant is now in operation as are also two Semet-Solvay Koller-type gas producers and a recirculating system at the plant of the Tennessee Eastman Corp., Kingsport, Tenn.

Zachary, La., Gets $16,000 Loan

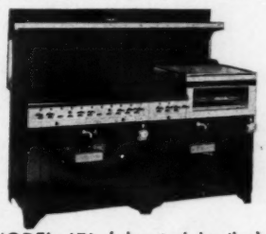
Zachary, La., has been granted a $16,000 loan by the Public Works Administration for the construction of a natural gas pipe line from the main line of the Interstate Natural Gas Co. to the town. Work will begin at once and gas is expected in Zachary within 60 days. S. E. Huey is engineer in charge of the project.

WEDGEWOOD *presents a* NEW line of MODERN *heavy-duty gas ranges*

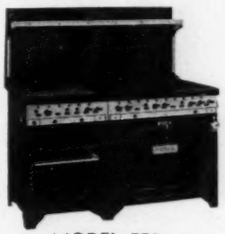
MODEL 521

Progress has brought tremendous advancement in heavy-duty gas range design and construction. A few of the NEW and MODERN Wedgewood models are shown here. Among the many MODERN Wedgewood features are:

HEAVILY INSULATED FULL PORCELAIN OVENS. GREATER FUEL SAVING. FULLY ENCLOSED VALVE MANIFOLDS ENHANCE OUTWARD APPEARANCE, EASILY CLEANED. BRIGHT, CLEAN, CHROMIUM TRIMMED PORCELAIN EXTERIORS. EXACT OVEN HEAT REGULATION TO TAKE THE GUESS-WORK OUT OF BAKING. PORCELAIN ENAMELED OVENS. EVERCOOL DOOR PULLS AND VALVE HANDLES. CONCEALED FLUE. PUSH BUTTON BURNER LIGHTERS. QUICKLY ACCESSIBLE VALVE ADJUSTMENTS AND A SCORE MORE OF THE FINEST FEATURES EVER SEEN ON ANY HEAVY-DUTY GAS RANGE.



MODEL 671 (elevated broiler)



MODEL 571

For
RESTAURANTS
CAFES
CLUBS
HOTELS
LARGE HOMES
HOSPITALS
SCHOOLS
BARRACKS,
ETC.

JAMES GRAHAM MANUFACTURING COMPANY

San Francisco, Los Angeles and Newark, California

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

Los Angeles, Calif. San Francisco, Calif.

Davenport, Iowa.

Newark, Ohio. Houston, Texas.

NEW *Sales Literature*

Now Available!

Pacific
GAS HEATING HEADQUARTERS

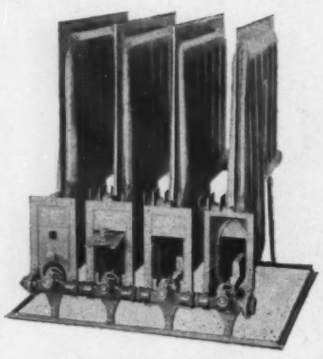
Our Line for 1934!

- FLOOR FURNACES
- CABINET HEATERS
- WALL HEATERS
- GAS STEAM RADIATORS
- RADIANT HEATERS
- WATER HEATERS
- GRAVITY FURNACES
- FORCED AIR FURNACES
- UNIT HEATERS

The Outstanding Gas Appliance Line of the Pacific Coast. Write for complete information on any or all items . . .

Pacific Gas Radiator Co.
Main Office and Factory
Huntington Park, California
Oldest and Largest Manufacturer of Gas Heating Appliances in the West

Electrogas



Junior Electrogas

ELECTROGAS JUNIOR FURNACE-BLOWER UNITS are now available. These comprise special Junior Units, adapted for blower use, with built-in oversize blowers and oversize filters.

ELECTROGAS FURNACE & MFG. CO.
2575 Bayshore Blvd., *San Francisco*
164 South Central Ave., *Los Angeles*

Group of Roper sales representatives gathered at Rockford, Ill., factory

Roper Presentation Covers 1934 Range Promotion

GEO. D. ROPER CORP., Rockford, Ill., has prepared a comprehensive sales and advertising presentation in connection with the recent introduction of its new 1934 line of gas ranges. The presentation is handsomely bound with an ornately embossed cover, and contains profusely illustrated descriptions of the features of the new Roper ranges.

The purpose of the presentation is to provide the gas sales manager with a complete advertising story for use in laying out the year's range promotion plans, providing material for sales meetings, and giving salesmen a complete selling kit.

Included in the promotion section of the presentation is a description of a campaign entitled "You Name It," a contest for a name for the new Roper range, which will be conducted in many cities throughout the United States during 1934. The "Point for Point" sales drive is another campaign fully described.

The new Roper Sales Presentation Manual also receives special attention in the presentation. This illustrated publication is designed for use by the house-to-house salesman. Other booklets offered are "Sales Resistance Analysis," "Pep Songs," "Questions and Answers." Suggested copy for radio broadcasts, letters to individual prospects, apartment house owners and managers are also included in the contents. Pep meetings and sales contest plans for the sales departments are covered in detail. Copies of the various promotional pieces are included in the presentation's contents.

Bowdoin Utilities Build 19-Mile Line To Supply Fort Peck, Mont.

Bowdoin Utilities Co., Minneapolis, Minn., has under construction a 19-mile, 8-inch pipe line to supply natural gas workers on the Fort Peck, Mont., reservoir project. The line will connect with the present Saco-Glasgow line just west of the Milk River crossing. Gas will come from the company's wells in the Bowdoin field about 60 miles west of Glasgow, Mont. Edward F. Moore, superintendent of construction for the Bowdoin Utilities Co., is in charge of the project. A crew of approximately 125 men will be employed on the construction which is expected to be completed in six weeks.

The line will consist of pipe in welded sections 120 feet long, joined together with Dresser couplings. The pipe will be coated with hot enamel and covered with felt wrapper. A booster station to be erected on or near Saco dome is contemplated.

Bowdoin Utilities Co. is a subsidiary of Bowdoin Holding Co. which is in turn controlled by the Minnesota Northern Power Co., Minneapolis, Minn.

All-Copper Pipe Line Laid From New Mex. Gas Field to Shiprock

Because of extremely bad soil conditions a 42,000 foot all-copper natural gas pipe line is being laid from the Rattlesnake oil field to Shiprock, New Mex., to supply fuel for two 275 h.p. natural gas engines which in turn will operate electric generators to furnish the Shiprock Indian Agency and five irrigation pumping plants of the U. S. Government with electric power. The line will be of hard drawn 2-inch copper tubing. Natural gas will be pumped from the Rattlesnake field to Shiprock at a compression of 300 to 400 pounds per square inch. The gas will also supply the Agency and school.

Mamou, La. Asks Federal Loan

Citizens of Mamou, La., have voted approval on the communitys application to the federal government for a loan of $55,000 to construct a municipal gas plant.

DIRECTORY

Byllesby Engineering and Management Corporation

Wholly-owned subsidiary of Standard Gas and Electric Company

231 South La Salle Street, Chicago
New York Pittsburgh San Francisco

• HYDRAUGER •
MODERN HORIZONTAL BORING MACHINE
For Underground Installation of Pipe and Conduits. Avoids damage to costly Pavements and saves time. Send for Bulletin.
HYDRAUGER CORPORATION, Ltd.
343 Sansome Street • San Francisco, California

QUIET
GENERAL MAGNETIC GAS VALVE FEATURES:
Electric Hum Eliminated, ½-3" sizes. Low and High Voltage. Built for High Pressure Gas. Made in slow-opening types. Simple in Design—Infallible in Operation—Low in Price.
GENERAL CONTROLS CO., LTD.
1539 Folsom St. San Francisco

DANIEL ORIFICE FITTING
MEETS THE SEVEREST OPERATING CONDITIONS
LET US TELL YOU OF OUR LATEST DEVELOPMENTS
DANIEL ORIFICE FITTING CO.
1900 SANTA FE AVE. LOS ANGELES

SHEER 31-A MOTOR GAS VALVE
Now Entering Its Third Year
LEADS IN PERFORMANCE AND LOW PRICES
Also Hi-Lo Gas Valve, Step-Opening Gas Valve, Thermostats, Safety Pilots, Limit Controls, Space Heater Regulators, Humidifiers, Etc. . . . .
WRITE FOR CATALOG
H. M. SHEER CO., QUINCY, ILL.

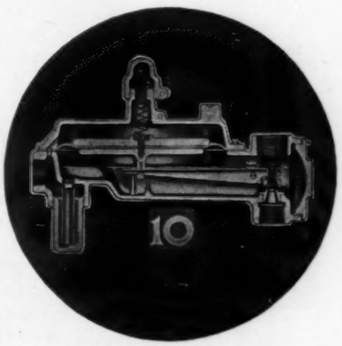
GAS PIPE LINE MAP
Compiled by the Editors of WESTERN GAS
Size 45" x 45"
The most comprehensive published; covers the 22 western states in detail. Gives gas fields, names of natural gas communities; sizes of pipe lines and names of pipe line companies.
PRICES:
Printed on Cloth, $3.50
WESTERN GAS
810 South Spring St. Los Angeles, Calif.

SATISFACTION

REYNOLDS Service Regulators answer every type of service requirement. Records of performance taken here, there and everywhere, are in the Reynolds files — they are the proof of the superiority of Reynolds Service Regulators in actual use.

Three things that are outstanding in Reynolds Service Regulators, are: Accurate control of pressure delivery even though inlet pressure and volume vary; quick response to changing load demands without disturbance of pressure and volume requirements; long life measured in periods of 20, 40 or more years. Each one of the Service Regulators is built to fit a specific requirement and like all Reynolds Products, they are precision built of quality materials.

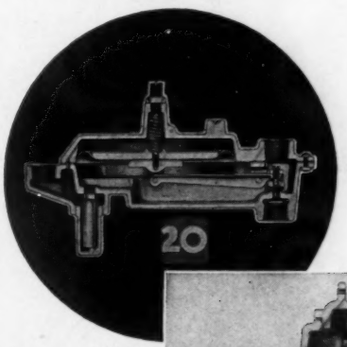
Write for detailed information. Use Reynolds offer of co-operation in working out your Gas Control problems.



Model 10–all parts accessible and interchangeable while in pipe line.

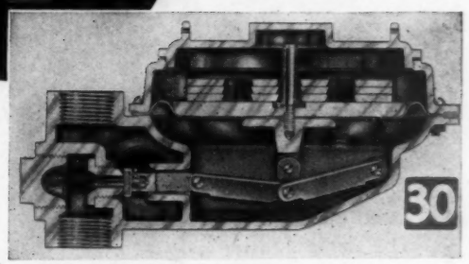
Model 20 – working parts so accurate as to permit complete interchangeability in shop.

Model 30–is manufactured in either spring or dead weight adjustment for horizontal or vertical connections.



Representatives:
Eastern Appliance Co.
Boston, Mass.
F. E. Newberry
Avon, New Jersey
G. H. Unkefer
428 Boyd St.
Los Angeles, Calif.

Reynolds Branch Offices:
421 Dwight Bldg.
Kansas City, Missouri
2nd Unit, Santa Fe Bldg.
Dallas, Texas



REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.
GAS CONTROL SINCE 1892

The heater that smiles while it warms

FRASER

Radiant Front Console

Imagine a circulating heater with all the added advantages of a cheerful open fireplace. It is absolutely new—a revolutionary contribution to gas heating.

Manufactured by

Fraser Furnace Company

Stockton, California

Distributed by

H. R. Basford Company

San Francisco Los Angeles

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.

Chester, Pa.

Annual Missouri Utility Convention, April 19-20

JUDGE H. O. CASTER, president of the American Gas Association, will be one of the speakers at the annual State convention of the Missouri Association of Public Utilities to be held April 19 and 20 in Excelsior Springs, Mo., at the Elms Hotel. His subject will be "The Trend of the Times."

Among the other speakers, and their subjects, will be:

A. W. Conover, Bristow, Okla., vice-president and general manager, Oklahoma Utilities Co., and member of the N. R. A. Code Authority for the electric utility industry, "Our Place in the N.R.A. Picture."

William Chamberlain, Chicago, Ill., chairman of the board, Continental Gas and Electric Corp., "Tax Equalization."

J. S. Tritle, East Pittsburgh, Pa., president, National Electric Manufacturers Association, "Achievements in Research."

E. A. Freund, St. Louis, Mo., load development engineer, Union Electric Light & Power Co., "Selling Controlled Climate."

Frank R. Innes, Chicago, Ill., western editor of Electrical World, "Government Water Power Projects."

An Open Forum on the evening of April 19 will be in charge of D. W. Snyder, Jr., president of the Missouri Power & Light Co., as chairman. Three subjects of local interest will be discussed, each subject to be under the leadership of local utility officials. The subjects will be:

"A Study of Rates of Municipal and Privately Owned Electric Plants in Missouri."

"Today's House Heating Market."

"Diversion of Utility Services."

The speaking program is almost completed, and is in charge of a committee headed by C. A. Semrad, president of the St. Joseph Railway, Light, Heat & Power Co. as chairman. Hermann Spoehrer, St. Louis, Mo., Union Electric Light & Power Co., is chairman of the Entertainment Committee, which is arranging an entertainment program which will include the annual banquet, dance, and sandwich spread, golf contests for men and women, bridge contests for women, tour of inspection, etc.

The Missouri State Speaking Contest, sponsored by the Association, will be held on the evening of April 18. Men and women orators, chosen by company eliminations from companies in Missouri, will compete.

The membership of the Association includes virtually all of the privately-owned gas, electric, water, and electric railway utilities in Missouri. About 250 delegates are expected to attend. Fred Karr, president of the St. Joseph Gas Co., is president of the Association. New officers will be elected at the closing business session of the convention.

Parkinson Named Commercial Mgr. for Portland G. & C.

B. H. Parkinson

B. H. Parkinson, manager of the customer's department of the Portland Gas & Coke Co. and the Northwestern Electric Co. for the past three years, has been appointed commercial manager for the former company. Announcement of his appointment came late in February from Paul B. McKee, president of Portland Gas & Coke.

Mr. Parkinson has been with the company since 1919, having served in the accounting and statistical departments of the organization prior to his appointment as manager of the customer's department.

International Pipe Line Co. Incorporated in Montana

The International Pipe Line Co., Sunburst, Mont., has been incorporated at an authorized capital of $400,000, to engage in pipe line transportation of oil and natural gas.

Capitalization is to be divided into 16,000 shares of par value of $25 a share. The Texas Co., Delaware corporation, has subscribed to $150,000 of stock. The corporation was organized by Y. A. Land, Denver, Colo.; P. Beall, Cody, Wyo.; and C. M. Webb, Sunburst.

Annual Home Service Conference April 13-14 in Chicago

April 13 and 14 have been set as dates for the annual conference sponsored by the Home Service Committee of the American Gas Association, to convene this year at Chicago. Dorothy Shank of the American Stove Co. is chairman of the committee.

The morning and afternoon sessions of April 13 will be followed by a dinner meeting in the Palmer House; April 14th sessions will be held in the home service department of The Peoples Gas Light and Coke Co.

Among the subjects included in the program are: A kitchen modernization review of short talks and an exhibit of kitchen planning material in use; what's new in gas appliances; demonstration of household gadgets; telling the consumer; low cost diets; home service in the competition story; and a full discussion on many phases of home service activities in the various companies.

Attendance from 17 states at a similar course, held in New York last spring, numbered over 200 home service women, sales managers and utilization men.

Bob Flournoy, Jr. Joins Daniel Orifice Fitting Co.

Announcement of the appointment of Bob Flournoy, Jr., to its sales staff has been made by the Daniel Orifice Fitting Co., Los Angeles, Calif. Mr. Flournoy has been connected for many years with the sale of pressure control equipment in the oil, gas and manufacturing industries of the Mid-Continent and Pacific Coast areas.

MRS. MODERN prides herself on being up-to-date in all things. She lives, moves and has her being in the light of *today*, with her face steadily turned toward *tomorrow*. She keeps abreast of current happenings, fashions and new ideas and developments affecting the home. In this realm, hers is the last word as well as the first . . . .

You are absolutely dependent on her good will. She dictates the lines you must handle. She decides where and how you must do business. For Mrs. Modern is *your customer* — the average woman of today . . . .

Mrs. Modern demands leisure and time for other interests besides cooking. She refuses to spend all of her day in the kitchen. Nevertheless for the time she does spend there, she insists that the kitchen be as modern and pleasant as any other room in the house . .

That's why Magic Chef appeals to her. She sees in it the *gas range of today* and for *today*, meeting her requirements of style and beauty, measuring up to her standards of modern efficiency, convenience and ease of operation.

Mrs. Modern likes her last word as well as did her mother. That's why she likes Magic Chef gas range, the last word in modern cooking appliances . . .

(Look for this Trademark)
Magic Chef
AMERICAN STOVE COMPANY

If you haven't seen the Magic Chef Portfolio for Spring, write for a copy.

AMERICAN STOVE COMPANY

WORLD'S LARGEST MANUFACTURER OF GAS RANGES

BOSTON • NEW YORK • ATLANTA • CLEVELAND • CHICAGO • PHILADELPHIA • ST. LOUIS • SAN FRANCISCO • LOS ANGELES • SEATTLE

WHERE ELSE WILL YOUR DOLLAR BUY ALL THESE FEATURES?

As a buyer or user of pipe, make a list of the desirable features that you think would make up the ideal pipe—and you will find them all in Republic Electric Weld Casing, Tubing and Line Pipe.

This pipe stands alone. It is made possible by Republic's patented process of welding by electrical resistance. Clean strip steel of the required ductility and tensile strength is formed to a perfect round, then welded without the addition of foreign metal and without heating except at and adjacent to the weld. The resulting pipe is free from dirt, scale and surface defects, round, uniform in wall thickness and diameter, and perfectly straight. It can be made in lengths up to fifty feet and of steel to meet any required strength or ductility.

So the answer is plain—nowhere else will your pipe dollar buy more than it will when you specify Republic Electric Weld Pipe. We shall be glad to send you an interesting book explaining in full the manufacturing process and making clear how all the features of this remarkable pipe are made possible by this process.

REPUBLIC ELECTRIC WELD LINE PIPE • CASING • TUBING

REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO